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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced at 1037 O.G. 12 on Dec. 13, 1983. The search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced at 1039 O.G. 142 on Feb. 21, 1984.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Prior corresponding U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Jan. 30, 1984. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,640,950, Re. S.N. 569,713, Filed Jan. 10, 1984, Cl. 524/181, HALOGENATED RESINS STABILIZED WITH NOVEL COMPOSITIONS, Lewis B. Weisfeld, Owner of Record: *Carstab Corp., Reading, Ohio,* Attorney or Agent: Alvin Guttag, Ex. Gp.: 143

3,645,835, Re. S.N. 569,981, Filed Jan. 11, 1984, Cl. 428/195, MOISTURE-VAPOR-PERMEABLE PRESSURE SENSITIVE ADHESIVE MATERIALS, Martin E. Hodgson, Owner of Record: *T. J. Smith & Nephew Ltd., Kingston-Upon-Hull, England,* Attorney or Agent: Albert L. Jacobs, Jr., Ex. Gp.: 164

4,277,125, Re. S.N. 571,918, Filed Jan. 19, 1984, Cl. 339/113R, ENHANCED DETENT GUIDE TRACK WITH DOG-LEG, David J. Ball, Owner of Record: *Automation Industries, Inc., Greenwich, Conn.,* Attorney or Agent: Thomas L. Flattery, et al., Ex. Gp.: 322

4,296,104, Re. S.N. 542,460, Filed Oct. 17, 1983, Cl. 424/153, THERAPEUTIC DIMETHYL SULFOXIDE COMPOSITION AND METHODS OF USE, Robert J. Herschler, Owner of Record: *Inventor,* Attorney or Agent: H. Ross Workman, et al., Ex. Gp.: 125

4,307,698, Re. S.N. 566,155, Filed Dec. 28, 1983, Cl. 123/647, DISTRIBUTOR FOR CONTACTLESS IGNITION APPARATUS FOR INTERNAL COMBUSTION ENGINE, Takashi Yoshinari, Owner of Record: *Hitachi, Ltd., Tokyo, Japan,* Attorney or Agent: Donald R. Antonelli, et al., Ex. Gp.: 342

4,310,889, Re. S.N. 568,426, Filed Jan. 5, 1984, Cl. 364/431, APPARATUS FOR ELECTRONICALLY CONTROLLING INTERNAL COMBUSTION ENGINE, Masumi Imai, et al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan,* Attorney or Agent: Donald R. Antonelli, et al., Ex. Gp.: 236

4,311,195, Re. S.N. 571,914, Filed Jan. 18, 1984, Cl. 166/120, HYDRAULICALLY SET WELL PACKER, Albert A. Mullins, II, et al., Owner of Record: *Baker International Corp., Orange, Calif.,* Attorney or Agent: William C. Norvell, Jr., et al., Ex. Gp.: 356

4,324,882, Re. S.N. 571,323, Filed Jan. 16, 1984, Cl. 528/206, METHOD FOR MAKING POLYIMIDES, Tohru Takekoshi, Owner of Record: *General Electric Co., Schenectady, N.Y.,* Attorney or Agent: William A. Teoli, et al., Ex. Gp.: 143

4,366,872, Re. S.N. 568,916, Filed Jan. 6, 1984, Cl. 177/1, WEIGHING CONTROLLING FLOW RATE WITH TARING BETWEEN WEIGHINGS, David Brunnschweiler, et al., Owner of Record: *Inventor,* Attorney or Agent: Norman F. Oblon, Ex. Gp.: 211

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,826,364, Reexam. No. 90/000,502, Requested: Feb. 10, 1984, Cl. 209/3.1, PARTICLE SORTING METHOD AND APPARATUS, William A. Bonner, et al., Owner of Record: *Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.,* Attorney or Agent: Flehr, Hohbach, et al., Ex. Gp.: 312, Requester: Niels J. Reimers, Stanford, Calif.

3,934,652, Reexam. No. 90/000,498, Requested: Feb. 6, 1984, Cl. 166/285, APPARATUS AND METHOD FOR CEMENTING WELL LINERS, Chudleigh B. Cochran, Owner of Record: *Hughes Tool Co., Houston, Tex.,* Attorney or Agent: Robert A. Felfman, Ex. Gp.: 356, Requester: Thomas R. Felger, Dallas, Tex.

4,190,602, Reexam. No. 90/000,500, Requested: Feb. 13, 1984, Cl. 560/053, MONOACETALS OR AROMATIC 1,2-DIKETONES, Jean Brunisholz, et al., Owner of Record: *Ciba-Geigy Corp., Ardsley, N.Y.,* Attorney or Agent: Karl F. Jorda, Ex. Gp.: 126, Requester: Denis A. Firth, North Haven, Conn.

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve ex-

peditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Patent Licensing.
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

ADMINISTRATION OF VETERANS AFFAIRS

SN 6—288,197 (4,422,515). MOTORIZED WHEEL CHAIR.

DEPARTMENT OF AGRICULTURE

SN 6—248,371 (4,417,839). AUTOMATIC HATCHERY TRAY DUMPER.
SN 6—251,667 (4,421,682). HEATING OF PROTEINACEOUS LIQUIDS.
SN 6—352,426 (4,420,369). PROCESS FOR THE DECOLORIZATION OF PULP MILL BLEACH PLANT EFFLUENT.
SN 6—356,864 (4,419,120). CONTROL OF PRICKLY SIDA, VELVETLEAF, AND SPURRED ANODA WITH FUNGAL PATHOGENS.
SN 6—356,865 (4,424,059). PROCESS AND COMPOSITIONS FOR PRESERVING FRESH HIDES AND SKINS.
SN 6—380,375 (4,418,647). ARTIFICIAL HOST EGG FOR REARING TRICHOGRAMMA.
SN 6—385,172 (4,421,775). METHOD FOR REMOVING THE OUTER WAXY CUTIN-CONTAINING LAYER FROM PAPAYA.
SN 6—426,439 (4,418,064). CHEMOTHERAPEUTICALLY ACTIVE MAYTANSINOIDS: TREFLORINE, TRENUDINE, AND N-METHYLTRENUDONE.
SN 6—519,783. WOOD BEAM.
SN 6—546,220. MONCOLONAL ANTIBODIES TO PORCINE IMMUNOGLOBULINS.
SN 6—555,749. MULTI-PHASE AGRICULTURAL HERBICIDE GRANULE METHOD.

DEPARTMENT OF HEALTH & HUMAN SERVICES

SN 6—209,305 (4,421,986). NUCLEAR PULSE DISCRIMINATOR.
SN 6—221,565 (4,419,446). RECOMBINANT DNA PROCESS UTILIZING A PAPILLOMA VIRUS DNA AS A VECTOR.
SN 6—329,869 (4,421,913). SEPARATION OF TRIPHENYLPHOSPHINE OXIDE FROM METHOTREXATE ESTER AND PURIFICATION OF SAID ESTER.
SN 6—563,369. HEPATITIS B CORE ANTIGEN VACCINE.
SN 6—564,515. A SHORT TOTAL SYNTHESIS OF MORPHINAN COMPOUNDS WHICH USES CYCLIZATION OF A CYCLOALKYLCARBONYL COMPOUND SELECTED FROM CYCLOPROPYLCARBONYL AND CYCLOBUTYLCARBONYL.
SN 6—817,016 (4,419,089). BLOOD CELL SEPARATOR.

DEPARTMENT OF THE AIR FORCE

SN 6—256,362 (4,409,661). AIMPOINT SELECTION PROCESSOR.
SN 6—270,051 (4,411,715). METHOD OF ENHANCING ROTOR BORE CYCLIC LIFE.
SN 6—286,819 (4,409,899). ACOUSTIC AMPLITUDE-DOPPLER TARGET RANGING SYSTEM.
SN 6—286,820 (4,408,533). ACOUSTIC AMPLITUDE-THRESHOLD TARGET RANGING SYSTEM.
SN 6—293,780 (4,410,293). MECHANICAL PRELOAD NUT ASSEMBLY.
SN 6—339,260 (4,408,833). HOT PRESSED AND DIFFUSION BONDED LASER MIRROR HEAT EXCHANGER.
SN 6—343,031 (4,409,587). ALTIMETER CODE CONVERTER.
SN 6—343,034 (4,411,022). INTEGRATED CIRCUIT MIXER APPARATUS.
SN 6—356,574 (4,409,423). HOLE MATRIX VERTICAL JUNCTION SOLAR CELL.
SN 6—357,444 (4,408,481). PORE PRESSURE PROBE ASSEMBLY AND TWO-STAGE EMPLACEMENT THEREOF.
SN 6—361,020 (4,408,464). DEWAR COOLING CHAMBER FOR SEMICONDUCTOR PLATELETS.
SN 6—393,170 (4,410,376). BONDING AGENT FOR POLYURETHANES.
SN 6—463,190 (4,411,717). SOLID ROCKET PROPELLANTS COMPRISING GUIGNET'S GREEN PIGMENT.

DEPARTMENT OF THE ARMY

SN 6—533,611. MILLIMETER WAVE DIELECTRIC RESONATOR AND METHOD OF MAKING.
SN 6—544,764. EVANESCENT RESONATOR FREQUENCY MULTIPLIER.
SN 6—550,853. CODE GENERATOR FOR MULTILEVEL INTERLEAVED MULTIPLEXED NOISE CODES.
SN 6—551,431. MULTILEVEL MATE PAIR CODE COMPRESSOR FOR CODES EXPANDED BY THE PROCESS OF BUTTING.
SN 6—555,774. CODE COMPRESSOR FOR MULTILEVEL INTERLEAVED MULTIPLEXED NOISE CODES.
SN 6—556,661. PSEUDO-RANDOM CONVOLUTIONAL INTERLEAVING.
SN 6—557,014. DUAL SPACE FED PARALLEL PLATE LENS ANTENNA BEAMFORMING SYSTEM.
SN 6—558,000. WIDE FIELD OF VIEW REMOTE POSITION SENSOR.
SN 6—559,546. METHOD OF MAKING MINIATURE HIGH FREQUENCY SC - CUT QUARTZ CRYSTAL RESONATORS.
SN 6—564,619. DETONATION PRODUCTS CATCHER.
SN 6—565,806. MULTICHANNEL TIME DIVISION MULTIPLEXED TRUNK TRANSMISSION LINK.
SN 6—566,622. OPTICAL COMMUNICATIONS SYSTEMS.
SN 6—566,767. TIME DIVISION MULTIPLE ACCESS COMMUNICATIONS SYSTEM.

DEPARTMENT OF THE INTERIOR

SN 6—435,535 (4,423,011). SELECTIVE RECOVERY OF BASE METALS AND PRECIOUS METALS FROM ORES.

Adverse Decisions in Interference

In the designated interference involving the indicated claims of the following patents, final decision having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,737,513, Tadeusz K. Wiewiorowski and David J. Miller, RECOVERY OF URANIUM FROM AN ORGANIC EXTRACTANT BY BACK EXTRACTION WITH H_3PO_4 OR HF, Interference No. 101,079, decided Jan. 27, 1984, claims 2 and 3.

Patent No. 3,926,822, Emile N. Habiby, NOVEL SULFUR-CONTAINING COMPOSITIONS, Interference No. 99,871, decided Jan. 6, 1984, claims 1, 3, 8 and 9.

Patent No. 3,953,347, Emile N. Habiby, NOVEL SULFUR-CONTAINING COMPOSITIONS, Interference No. 100,000, decided Jan. 6, 1984, claims 1 and 3.

Patent No. 4,008,614, Robert B. Turner and Paul E. Brefka, REMOVABLE PROBE UNIT FOR ELECTRONIC MEASURING SYSTEM, Interference No. 100,619, decided Sept. 27, 1983, claims 1–3, 6, 7, 9 and 10.

Patent No. 4,089,733, Richard H. Zimmerman, METHOD OF FORMING COMPLEX SHAPED METAL-PLASTIC COMPOSITE LEAD FRAMES FOR IC PACKAGING, Interference No. 100,454, decided Oct. 21, 1983, claims 1–5.

Patent No. 4,165,440, Leo Kim, CATALYTIC HYDRATION OF ETHYLENE OXIDE TO ETHYLENE GLYCOL, Interference No. 100,927, decided Jan. 20, 1984, claims 1 and 3.

Patent No. 4,185,529, Hiroshi Kitagawa, ELECTRONIC MUSICAL INSTRUMENT, Interference No. 100,712, decided Sept. 12, 1983, claim 8.

Patent No. 4,194,314, John P. Foote, EJECTOR ASSEMBLY FOR A FIREARM ADAPTER, Interference No. 100,932, decided Oct. 12, 1983, claims 4 and 5.

Patent No. 4,224,330, Clive A. Henrick, Jeffrey N. Labovitz, Michael M. Leippe and Sam L. Woo, ESTERS AND THIOLESTERS OF BENZOTHIENYL ACIDS, Interference No. 100,910, decided Jan. 4, 1984, claims 1–10 and 28.

Patent No. 4,235,806, Kishor A. Desai, CATIONIC ALPHA-CYANO-P-(N-BENZYL-N-ETHYLAMINO) CINNAMOYL DYES, Interference No. 100,750, decided Feb. 10, 1983, claims 1 and 2.

Patent No. 4,237,222, Hideo Misaki, Yoshifumi Horiuchi, Kazuo Matsuura and Saburo Harada, LACTATE OXIDASE PROCESS FOR THE MANUFACTURE THEREOF AND ANALYTICAL METHOD AND KIT FOR THE USE OF THE SAME, Interference No. 100,995, decided Jan. 17, 1984, claim 1.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Interferences.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,703,073, Riegel Textile Corp., ANTISTATIC YARN PRODUCTION, **filed** Nov. 30, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 8726, *Brunswick Corp.* v. *Riegel Textile Corp.*

3,815,099, Digital Equipment Corp., DATA PROCESSING SYSTEM; **4,229,791, same,** DISTRIBUTED ARBITRATION CIRCUITRY FOR DATA PROCESSING SYSTEM; **4,232,366, same,** BUS FOR A DATA PROCESSING SYSTEM WITH OVERLAPPED SEQUENCES, **filed** Nov. 13, 1980, D.C. Mass. (Boston), Doc. 80-2551-K, *Digital Equipment Corp.* v. *System Industries, Inc.*

4,046,324, Joseph W. Chambers, SOLID WASTE COMMINUTOR; **4,275,849,** William M. Chambers, MACERATOR, **filed** Feb. 9, 1979, D.C., C.D. Calif. (Los Angeles), Doc. 79-0560-MML (Px), *Joseph W. Chambers, Sr.* v. *William M. Chambers.*

4,102,655, Cobe Laboratories, Inc., BUBBLE TRAP, **filed** Nov. 1, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 7774, *Cobe Laboratories, Inc.* v. *Gambro, Inc.*

4,103,361, Evin Industries, Ltd., OUTERWEAR, **filed** Sept. 29, 1983, D.C., S.D.N.Y., Doc. 83-Civ-7159 SWK, *Evin Industries, Ltd.* v. *Eagle Clothes, Inc., et al.*

4,107,292, Akzona, Inc., STABLE WATER DISPERSIONS OF ENCAPSULATED PARATHION, **filed** Mar. 26, 1979, D.C. Del. (Wilmington), Doc. 79-157, *Pennwalt Corp.* v. *Akzona, Inc., et al.* Judgment is hereby entered declaring Pat. No. 4,107,292 invalid. Judgment is hereby entered in favor of plaintiff and against defendants. Final Judgment dated Aug. 22, 1983.

4,113,268, Posi Seal International, Inc., EXTENDED TEMPERATURE RANGE VALVE SEAL, **filed** Apr. 30, 1982, D.C., S.D. Ohio (Cincinnati), Doc. C-1-82-450, *Posi Seal International, Inc.* v. *Xomox Corp.*

4,117,260, Comm/Scope Co., COAXIAL DROP WIRE, **filed** Aug. 3, 1979, D.C., W.D.N.C. (Statesville), Doc. ST-C-79-21, *Belden Corp.* v. *Comm/Scope Co.* Order of Dismissal filed Apr. 10, 1980.

4,118,129, Qume Corp., ROTARY WHEEL PRINTING SYSTEM, **filed** Apr. 27, 1983, D.C., N.D. Calif. (San Francisco), Doc. 83-2147 SC, *Tokyo Electric Co., Ltd.* v. *Qume Corp.* Plaintiff dismisses complaint without prejudice on Aug. 2, 1983.

4,120,134, Scholle Corp., APPARATUS FOR AND METHOD OF FILLING FLEXIBLE CONTAINERS, **filed** June 22, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-3116, *Scholle Corp.* v. *Robert Ellert, et al.*

4,132,335, Four Star Corp., SLIDABLE BRACKET FOR ARTICLE CARRIER, **filed** Nov. 16, 1983, D.C., E.D. Mich. (Detroit), Doc. 83CV5001DT, *Four Star Corp.* v. *John A. Bott, et al.*

4,136,359, Apple Computer, Inc., MICROCOMPUTER FOR USE WITH VIDEO DISPLAY; **4,278,972, same,** DIGITALLY-CONTROLLED COLOR SIGNAL GENERATION MEANS FOR USE WITH DISPLAY, **filed** May 17, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83 3213, *Apple Computer, Inc.* v. *Michael P. McCaul and Sheila Ann McCaul, doing business as Cosmic Computers, Unlimited.* Final Judgment and injunction filed restraining defendants from importing, distributing, selling, etc. any computer products copying Apple products. Dated Nov. 4, 1983.

4,136,767, The Sardee Corp., VACUUM OPERATED CAN-CONVEYING AND CAN-UPRIGHTING APPARATUS, **filed** Oct. 1, 1981, D.C.N.J. (Trenton), Doc. 81-3112, *The Sardee Corp.* v. *Kaiser Aluminum & Chemical Corp.* **Same, filed** Oct. 28, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 6063, *United Systems, Inc.* v. *The Sardee Corp.*

4,138,108, Charles H. Robinson, ATHLETIC HAND/WRIST POSITIONER, **filed** May 18, 1981, D.C., M.D. Fla. (Jacksonville), Doc. 81-431-Civ-J-WC, *Charles H. Robinson* v. *Gene Patton.*

4,139,166, Menzel, Inc., SURFACE WIND BATCHER, **filed** Oct. 12, 1982, D.C.S.C. (Columbia), Doc. 82-2575-3, *Menzel, Inc.* v. *Bond Textile Machinery, Inc., et al.* Consent Stipulation of Settlement under 41(a) (1) FRCP filed Aug. 23, 1983.

4,144,461, Victoreen, Inc., METHOD AND APPARATUS FOR ASSAY AND STORAGE OF RADIOACTIVE SOLUTIONS, **filed** Nov. 29, 1982, D.C.N.J. (Newark), Doc. 82-3999, *Victoreen, Inc.* v. *Capintec, Inc.* Stipulation and Order dismissing action without costs, filed Nov. 17, 1983.

4,145,300, Sublistatic Holding S.A., DEVELOPERS CONTAINING MAGNETIC PARTICLES AND A SUBLIMABLE DYESTUFF; **4,246,331, same,** ELECTROPHOTOGRAPHIC DEVELOPERS CONTAINING SUBLIMABLE DYES; **4,251,611, same,** PROCESS FOR FORMATION OF PERMANENT IMAGE, **filed** May 27, 1981, D.C., E.D. Va. (Norfolk), Doc. 81-470-N, *Spectra Corp. and Sublistatic Holding S.A.* v. *Edward W. O'Brien, doing business as Powerband Products of Va.* Final Judgment filed Jan. 5, 1984.

4,148,410, Ermal C. Fraze, TAB FOR EASY-OPEN ECOLOGY END, **filed** Mar. 11, 1981, D.C., S.D. Ohio (Dayton), Doc. C-3-81-183, *Ermal C. Fraze* v. *The Continental Group, Inc., et al.* Case closed on Jan. 8, 1982.

4,150,768, Walter P. Maynard, Jr., CONTAINER OPENING AND POURING ATTACHMENT, **filed** Dec. 14, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 6953, *Walter P. Maynard, Jr.* v. *Custom Accessories, Inc.*

4,153,998, Rolls-Royce Ltd., PROBES, **filed** Apr. 21, 1983, D.C., E.D. Mich. (Detroit), Doc. 83 cv 1497 DT, *Rolls-Royce Ltd., et al.* v. *The Valeron Corp.*

4,161,436, Gordon Gould, METHOD OF ENERGIZING A MATERIAL, **filed** Nov. 1, 1979, D.C., N.D. Ill. (Chicago), Doc. 79 C 4594, *Gordon Gould* v. *Lumonics Research, Ltd.*

4,165,717, Metallgesellschaft AG, PROCESS FOR BURNING CARBONACIOUS MATERIALS, **filed** Feb. 14, 1983, D.C., S.D. Calif. (San Diego), Doc. 83-0356-GT(H), *Metallgesellschaft AG* v. *Pyropower Corp.* **Same, filed** Feb. 14, 1983, D.C., E.D. Calif. (Fresno), Doc. CV F-83-57-EDP, *Metallgesellschaft AG* v. *Gulf Oil Corp., et al.* **Same, filed** June 8, 1983, D.C., N.D.N.Y., (Utica), Doc. 83-CV-715, *Metallgesellschaft AG* v. *Ahlstrom Machinery, Inc.* **Same, filed** Sept. 12, 1983, D.C., N.D.N.Y. (Utica), Doc. 83-CV-1193, *Metallgesellschaft AG* v. *A. Ahlstrom Osakeyhtio.* Stipulation of dismissal filed Nov. 17, 1983.

4,166,018, Airco, Inc., SPUTTERING PROCESS AND APPARATUS, **filed** Apr. 11, 1980, D.C., E.D. Mich. (Detroit), Doc. 80-71477, *Airco, Inc.* v. *Shatterproof Glass Corp.* **Same, filed** May 30, 1980, D.C.N.J. (Newark), Doc. 80-1568, *Libbey-Owens-Ford Co.* v. *Airco, Inc.* **Same, filed** June 3, 1980, D.C., N.D. Ohio (Toledo), Doc. 80-341, *Airco, Inc.* v. *Libbey-Owens-Ford Co.*

4,173,973, David J. Hendricks, HYPEREXTENSION BACK BRACE, **filed** Apr. 4, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 2395, *David J. Hendricks, et al.* v. *Surgical Appliances Industries, Inc.*

4,175,902, Herzog Contracting Corp., APPARATUS FOR LOADING AND UNLOADING RAILROAD CARS; **4,190,394, same,** METHOD FOR LOADING AND UNLOADING RAILROAD CARS, **filed** Nov. 15, 1983, D.C., S.D. Ill. (Benton), Doc. 83-4299, *Stanley M. Herzog, Randy L. Poggemiller, and Herzog Contracting Corp.* v. *Gary Parks, doing business as "Mid South Railroad Services".*

4,178,843, Wear-Ever Aluminum, Inc., PORTABLE CORN POPPER, **filed** June 23, 1981, D.C., E.D. Wis. (Milwaukee), Doc. 81-730, *Dart Industries, Inc., doing business as The West Bend Co.* v. *Wear-Ever Aluminum, Inc.*

4,179,018, John H. Miller, METHOD AND APPARATUS FOR SELECTIVE RECOVERY OF METAL CONTAINERS; **4,257,511, same, filed** Nov. 10, 1983, D.C. Ariz. (Phoenix), Doc. CIV-83-2201-PHX-CLH, *Shirley L. Miller, et al.* v. *Adolph Coors Co., et al.*

4,181,955, Mathematical Applications Group, Inc., APPARATUS FOR PRODUCING PHOTOGRAPHIC SLIDES, **filed** May 3, 1983, D.C., S.D.N.Y., Doc. 83-Civ-1921 ADS, *Mathematical Applications Group, Inc.* v. *Autographix, Inc., et ano.*

4,182,494, Anthony Mfg. Corp., ANTI SIDE SPLASH DRIVE ARM FOR AN IMPACT DRIVE SPRINKLER, **filed** Nov. 27, 1981, D.C., S.D. Fla. (Ft. Lauderdale), Doc. 81-6661-Civ-JAG, *Safe-T-Lawn, Inc.* v. *Anthony Mfg. Corp.*

4,186,982, AMP, Inc., CONTACT WITH SPLIT PORTION FOR ENGAGEMENT WITH SUBSTRATE, **filed** Oct. 7, 1983, D.C., M.D. Pa. (Scranton), Doc. CV-83-1456, *AMP, Inc.* v. *E. I. Du Pont de Nemours and Co.*

4,188,189, University Patents, Inc., QUANTITATIVE TESTING FOR VITAMIN B12, **filed** Mar. 16, 1981, D.C., Colo. (Denver), Doc. 81-A-341, *University Patents, Inc.* v. *Colorado Pathologists Regional Laboratory, Inc.* Order of Dismissal without prejudice filed Nov. 19, 1981. **Same, filed** Jan. 8, 1982, D.C., N.D. Calif. (San Francisco), Doc. C82-0180 WHO, *University Patents, Inc.* v. *Western Laboratories, Inc., et al.* **Same, filed** Mar. 23, 1982, D.C. Del. (Wilmington), Doc. 82-146, *Becton Dickinson and Co.* v. *University Patents, Inc.* **Same, filed** Apr. 28, 1982, D.C. Del. (Wilmington), Doc. 82-213, *University Patents, Inc., et al.* v. *Bio-Rad Laboratories, Inc.*

4,188,762, Champion International Corp., TRIPLE LAP HARDBOARD SIDING, **filed** Dec. 6, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 8933, *Champion International Corp.* v. *Masonite Corp.*

4,190,394. (See 4,175,902.)

4,193,284, Nathan O. McCrary, CANE CUTTING AND MOLDING TOOL AND METHOD OF USING SAME, **filed** Oct. 29, 1982, D.C., S.D. Iowa (Des Moines), Doc. 82-614-E, *Nathan O. McCrary* v. *C. T. Corp. Systems.* Action dismissed with prejudice per Stipulation of Dismissal under Rule 41(a). Filed Aug. 15, 1983.

4,194,814, Bausch & Lomb, Inc., TRANSPARENT OPTHALMIC LENS HAVING ENGRAVED SURFACE INDICIA, **filed** Oct. 5, 1983, D.C., N.D. Calif. (San Jose), Doc. C 83 20283, *Bausch & Lomb, Inc.* v. *Barnes-Hind/Hydrocurve, Inc., et al.*

4,204,225, Wisconsin Alumni Research Foundation, REAL-TIME DIGITAL X-RAY SUBTRACTION IMAGING; **4,204,226, same,** REAL-TIME DIGITAL X-RAY TIME INTERVAL DIFFERENCE IMAGING, **filed** May 4, 1982, D.C., N.D. Calif. (San Francisco), Doc. 82 2010 EFL, *Adac Laboratories* v. *Wisconsin Alumni Research Foundation.* Defendant's Motion for an Order dismissing cause granted on Aug. 27, 1982.

4,204,226. (See 4,204,225.)

4,208,747, The Procter & Gamble Co., PASSIVE DOSING DISPENSER EMPLOYING TRAPPED AIR BUBBLE TO PROVIDE AIR-LOCK; **4,305,162, same,** PASSIVE DOSING DISPENSER EMPLOYING CAPTIVE AIR BUBBLE TO PROVIDE PRODUCT ISOLATION, **filed** Oct. 13, 1982, D.C. Del. (Wilmington), Doc. 82-671, *The Procter & Gamble Co.* v. *Boyle-Midway, Inc.*

4,208,831, Shelcore, Inc., DRIVING SIMULATOR TOY, **filed** Oct. 13, 1982, D.C., E.D. Pa. (Philadelphia), Doc. 82-4493, *Shelcore, Inc.* v. *Durham Industries, Inc.* Pat. No. 4,208,831 is found to be invalid due to obviousness. Judgment entered in favor of defendant and against plaintiff on Jan. 6, 1984.

4,209,261, NCR Corp., RIBBON CASSETTE FOR OBLIQUE RIBBON FEEDING, **filed** Sept. 19, 1980, D.C., M.D. Tenn. (Nashville), Doc. 80-3507, *NCR Corp.* v. *Graphic Ribbon, Inc.* Plaintiff is the owner of Pat. No. 4,209,261 which is good and valid in law. Defendant is enjoined and permanently restrained from further infringing Plaintiff's patent. Filed Sept. 15, 1981.

4,210,207, Baker International Corp., VALVE APPARATUS, **filed** Aug. 23, 1983, D.C., S.D. Tex. (Houston), Doc. H-83-5145, *Baker International Corp.* v. *Dresser Industries, Inc.*

4,211,426, Everest & Jennings, Inc., WEIGHT RELIEVING AMBULATOR, **filed** Dec. 13, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83 7934, *Everest & Jennings, Inc.* v. *L. Mulholland Corp.*

4,214,600, Cameron Iron Works, Inc., VALVE, **filed** Aug. 23, 1983, D.C., S.D. Tex. (Houston), Doc. H-83-5138, *Cameron Iron Works, Inc.* v. *Axelson, Inc.*

4,215,431, John Nady, WIRELESS TRANSMISSION SYSTEM, **filed** Apr. 28, 1982, D.C., N.D. Calif. (San Francisco), Doc. C82-1842SC, *Sam Ash Music Corp.* v. *John Nady.* Stipulation of Dismissal filed Mar. 15, 1983.

4,217,254, Synthetic Surfaces, Inc., HIGH GREEN STRENGTH CURABLE URETHANE ADHESIVE, **filed** Oct. 7, 1983, D.C., N.D. Tex. (Dallas), Doc. CA3-83-1726-G, *Superturf, Inc.* v. *Synthetic Surfaces, Inc.*

4,218,090, Neal D. Hoffacker and Bernhard J. Hoffacker, BICYCLE SEAT, **filed** Dec. 9, 1980, D.C. Colo. (Denver), Doc. 81-K-907, *Neal D. Hoffacker, Bernhard J. Hoffacker, et al.* v. *Bike House, et al.* Pat. No. 4,218,090 is valid and owned by Plaintiffs. Defendants shall not further infringe Plaintiff's patent. Consent Judgment filed Nov. 6, 1982.

4,219,289, Trutzschler GmbH & Co. KG, ARRANGEMENT FOR LOADING A CARD, **filed** Aug. 31, 1981, D.C., W.D.N.C. (Charlotte), Doc. C-C-81-0381, *Trutzschler GmbH & Co. KG, et al.* v. *Automatic Material Handling, Inc.*

4,224,018, Thomas M. Smith, INFRA-RED APPARATUS; **4,272,238, same,** INFRA-RED HEATING AND BURNERS; **4,290,746, same,** RADIANT HEATING; **4,326,843, same,** GAS-FIRED INFRA-RED GENERATORS AND USE THEREOF, **filed** Sept. 1, 1982, D.C. Conn. (Hartford), Doc. H-82-835, *Hunt Associates, Inc. and Thomas M. Smith* v. *North American Technology, Inc., et al.*

4,227,126, Henry M. Denecke, SHAFT ROTATION INTERLOCK SYSTEM FOR FILM EDITING TABLES AND THE LIKE, **filed** Aug. 1, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83 4945 TJH (Tx), *Michael Denecke* v. *Eagle Eye Film Co., Inc.* Pat. No. 4,227,126 is owned by Plaintiff and is good and valid in law. Defendant is permanently enjoined from infringing Plaintiff's patent. Consent Judgment filed Oct. 7, 1983.

4,227,829, Kossuth J. Landry, Jr., SOIL EROSION PREVENTION BLOCKS, **filed** Aug. 3, 1981, D.C., N.D. Ga. (Atlanta), Doc. C81-1450A, *Petra, Inc., and Kossuth J. Landry, Jr.* v. *Nicolon Corp., et al.*

4,229,025, Perfection Corp., STAB-TYPE COUPLING, **filed** Nov. 30, 1983, D.C., W.D. Pa. (Erie), Doc. 83-335 Erie, *Perfection Corp.* v. *Dresser Industries, Inc.*

4,229,791. (See 3,815,099.)

4,231,105, UMC Industries, Inc., VENDOR CONTROL CIRCUIT, **filed** Oct. 4, 1983, D.C. Minn. (Minneapolis), Doc. 4-83 Civil 867, *UMC Industries, Inc.* v. *Automatic Products Co., Inc., et al.*

4,232,366. (See 3,815,099.)

4,232,899, August, Inc., SEATING UNIT AND METHOD OF CONSTRUCTION, **filed** Sept. 14, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 6415, *August, Inc.* v. *Steelcase, Inc., et al.*

4,242,035, Robert L. Hornstein, APPARATUS FOR CONVERTING A LOADER BUCKET TO A PALLET LOADER, **filed** Nov. 11, 1981, D.C., S.D. Ill. (E. St. Louis), Doc. 81-3422, *Robert L. Hornstein, et al.* v. *Tri-Star Corp.*

4,243,864, Vieau and Vieau, MULTIPLE WIRE ELECTRODE FEED MECHANISM FOR ELECTROEROSION MACHINE, **filed** Oct. 27, 1982, D.C., E.D. Mich. (Detroit), Doc. 82-74026, *Richard A. Vieau* v. *McWilliam Machinery Sales, Inc.*

4,246,331. (See 4,145,300.)

4,251,611. (See 4,145,300.)

4,257,511. (See 4,179,018.)

4,261,598, Kenneth R. Cornwall, CONCRETE FLOOR EMBEDDED COUPLING FOR PLASTIC PIPE, **filed** Dec. 8, 1983, D.C., S.D. Fla. (Ft. Lauderdale), Doc. 83-6860-Civ-JAG, *Kenneth R. Cornwall* v. *U.S. Construction Mfg., Inc.*

4,263,879, State Industries, Inc., WATER HEATER, **filed** May 20, 1981, D.C., M.D. Tenn. (Nashville), Doc. 81-3319, *State Industries, Inc.* v. *A. O. Smith Corp.*

4,264,083, Custom Accessories, Inc., SPLASH GUARD, **filed** Oct. 18, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 7280, *Custom Accessories, Inc.* v. *Globe Distribution, Barnes Group, Inc.*

4,266,700, Vari-O-Matic Machine Corp., A FREELY ADJUSTABLE PIN-TUCKING DEVICE FOR USE IN A PIN TUCKING MACHINE, **filed** Sept. 8, 1982, D.C., S.D.N.Y., Doc. 82-Civ-5982 RLC, *Vari-O-Matic Machine Corp.* v. *N.Y. Sewing Machine Attachment Corp.*

4,272,238. (See 4,224,018.)

4,275,849. (See 4,046,324.)

4,278,972. (See 4,136,359.)

4,279,533, Harry S. Peterson Co., Inc., ROADWAY EXPANSION JOINT, **filed** Dec. 16, 1981, D.C. Minn. (Minneapolis), Doc. 4-81 Civil 893, *Harry S. Peterson Co., Inc.* v. *American Inland Corp.*

4,281,728, Lodec, Inc., VEHICLE PLATFORM SCALE, **filed** Sept. 20, 1983, D.C., W.D. Wash. (Seattle), Doc. C83-1320M, *Lodec, Inc.* v. *World Wide Weighing, Inc.*

4,290,746. (See 4,224,018.)

4,293,140, Pretty Products, Inc., AUTOMOBILE SPLASH GUARD AND ATTACHMENT MEANS THEREFOR, **filed** Mar. 26, 1982, D.C., S.D. Ohio (Columbus), Doc. C-2-82-311, *Pretty Products, Inc.* v. *Powerflow Products Ltd.* **Same, filed** Aug. 30, 1983, D.C., N.D. Ohio (Akron), Doc. C83-3575A, *Pretty Products, Inc.* v. *Powerflow, Inc.*

4,296,152, Idacon, Inc., METHOD AND COMPOSITION FOR TREATING WOOD WITH PENTACHLOROPHENOL, **filed** Apr. 13, 1982, D.C., E.D. Okla. (Muskogee), Doc. 82-158-C, *Idacon, Inc.* v. *Central Forest Products, Inc., et al.*

4,296,744, P. M. Palumbo, DYNAMIC PATELLAR BRACE, **filed** Feb. 4, 1982, D.C., S.D. Calif. (San Diego), Doc. 82-0119-K-H, *P. M. Palumbo, et al.* v. *Doy-Joy Co., et al.*

4,305,162. (See 4,208,747.)

4,308,713, Terrain King Corp., HYDRAULICALLY DRIVEN MOWER, **filed** Jan. 6, 1982, D.C., N.D. Fla. (Tallahassee), Doc. TCA 82-0704, *Terrain King Corp.* v. *John D. Williams, Jr., et al.*

4,309,639, Herbert T. Thrower, Jr., LIGHT MODULATOR SYSTEM AND METHOD, **filed** Mar. 31, 1982, D.C., W.D.N.C. (Charlotte), Doc. C-C-82-0188-P, *Dotech, Inc. and Herbert T. Thrower, Jr.* v. *Allied Corp., et al.*

4,310,988, George D. Porter, Jr., APPARATUS FOR SELECTIVE FIELD APPLICATION OF HERBICIDES TO WEEDS, **filed** May 27, 1982, D.C., N.D. Iowa (Cedar Rapids), Doc. 1C 82-3041, *George D. Porter, Jr.* v. *Buckley & Bush, Inc.* Defendant permanently enjoined from manufacturing and/or selling herbicide applicator equipment for the life of said patent per Final Order, Judgment and Decree filed on Aug. 11, 1982.

4,320,988, James C. Seal, SPREADER/GRADER, **filed** Oct. 20, 1983, D.C., E.D. La. (New Orleans), Doc. 83-5189 "J", *Ivy J. Foret Associates, Inc.* v. *J. C. Seal, et al.*

4,326,348, Esco Corp., EXCAVATING TOOTH ASSEMBLY, **filed** May 11, 1983, D.C. Ariz. (Phoenix), Doc. 83-863 Phx, *Esco Corp.* v. *Construction and Mining Supply Co.*

4,326,843. (See 4,224,018.)

4,327,753, Icomag Trust Reg., HAIR-CURLING IMPLEMENT, **filed** Dec. 6, 1983, D.C., S.D. Fla. (Miami), Doc. 83-2965-Cov-EBD, *Icomag Trust Reg.* v. *Windmere Corp.*

4,332,008, Zilog, Inc., MICROPROCESSOR APPARATUS AND METHOD; Reg. No. **1,083,256** (Z-80),

Zilog, Inc., **filed** Mar. 14, 1983, D.C., N.D. Calif. (San Francisco), Doc. C83-1241WHO, *Zilog, Inc.* v. *Nippon Electric Co., Ltd., et al.*

4,332,537, ENCAPSULATION MOLD WITH REMOVABLE CAVITY PLATES, Dusan Slepcevic, **filed** Aug. 19, 1982, D.C., N.D. Calif. (San Francisco), Doc. C82 4403 WAI, *Dusan Slepcevic* v. *Kras/West Corp., et al.*

4,336,427, Vacu-Maid, Inc., OUTLET ASSEMBLY FOR A VACUUM CLEANING SYSTEM, **filed** Dec. 14, 1983, D.C., W.D. Okla. (Oklahoma City), Doc. CIV-83-3069-T, *Vacu-Maid, Inc.* v. *Hayden Mfg. Co., Ltd.*

4,341,470, Varian Associates, Inc., ATOMIC ABSORPTION SPECTROSCOPY, **filed** Jan. 6, 1984, D.C. Conn. (Bridgeport), Doc. B-84-10 TFGD, *Perkin-Elmer Corp.* v. *Varian Associates, Inc.*

4,342,450, Borg-Warner Corp., COMPOSITE CHAIN LINK ASSEMBLY, **filed** Oct. 20, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 7350, *Borg-Warner Corp.* v. *PT Components, Inc.*

4,343,032, Cable Electric Products, Inc., LIGHT SENSITIVE ELECTRICAL DEVICE, **filed** Mar. 7, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83 1357, *Cable Electric Products, Inc.* v. *Home Equipment Mfg. Co.* Action dismissed without prejudice on Aug. 24, 1983.

4,346,958, Augat, Inc., CONNECTOR FOR CO-AXIAL CABLE, **filed** Dec. 29, 1982, D.C., N.D.N.Y. (Utica), Doc. 82-CV-1465, *Augat, Inc.* v. *John Mezzalingua Associates, Inc.*

4,350,240, Equipment Systems & Devices, Inc., COIN SLIDE WITH INTERCHANGEABLE CORES, **filed** Aug. 11, 1983, D.C., E.D. Pa. (Philadelphia), Doc. 83-3893, *Equipment Systems & Devices, Inc.* v. *Kidde, Inc.*

4,353,329, Osborne Industries, Inc., ROTARY SELF-FEEDER, **filed** Oct. 17, 1983, D.C., M.D. Pa. (Scranton), Doc. CV-83-1494, *Osborne Industries, Inc.* v. *Farmer Boy AG., Inc.*

4,354,613, Trafalgar Industries, Inc., MICROPROCESSOR BASED VENDING APPARATUS, **filed** Jan. 31, 1983, D.C. Minn. (St. Paul), Doc. 3-83-111, *Trafalgar Industries, Inc.* v. *Automatic Products Co., Inc., et al.*

4,357,028, Chicago Roller Skate Co., ROLLER SKATE WITH IMPROVED SOLE PLATE, **filed** Nov. 12, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 6957, *Chicago Roller Skate Co.* v. *Zayre Corp.*

4,361,509, Scripps Clinic & Research Foundation, ULTRA PURIFICATION OF FACTOR VIII USING MONOCLONAL ANTIBODIES, **filed** Nov. 8, 1983, D.C., N.D. Calif. (San Francisco), Doc. C-83-5424-RPA, *Scripps Clinic & Research Foundation, et al.* v. *Chiron Corp.*

4,372,624, Smith International, Inc., DYNAMIC O-RING SEAL, **filed** Nov. 23, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83-7613 PAR (Mcx), *Smith International, Inc.* v. *Hughes Tool Co.*

4,373,123, Wico Corp., STUDDED MOUNTING STRUCTURE FOR SWITCH, **filed** June 13, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 4050, *Wico Corp.* v. *Suzo Trading CY BV.*

4,374,404, Innovative Computer Products Corp., NON-ABRASIVE MAGNETIC HEAD CLEANING SYSTEM; **4,377,831, same, filed** Feb. 15, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83-0966 CHH (Jrx), *Innovative Computer Products Corp.* v. *Head Computer Products, Inc., et al.*

4,377,130, Lonny D. Schwieger, ANIMAL ACTUATED FEED AND WATER DISPENSING APPARATUS, **filed** Dec. 30, 1983, D.C., N.D. Iowa (Sioux City), Doc. C83-4218, *Lonny D. Schwieger* v. *Glen Kruse, doing business as Kruse Mfg. & Eastern Iowa Pork, Inc.*

4,377,831. **(See 4,374,404.)**

4,379,594, Barry A. Willey, MOTORCYCLE SAFETY WINDSHIELDS, **filed** Aug. 29, 1983, D.C., C.D. Ill. (Danville), Doc. 83-2365, *Barry A. Willey* v. *Vetter Products, Inc.*

4,379,696, Color Communications, Inc., LATEX MYLAR CHIP, **filed** Jan. 4, 1984, D.C., W.D.N.Y. (Buffalo), Doc. Civ-84-0009C, *Color Communications, Inc.* v. *La Clede Mfg. Co., Inc., doing business as La Clede Color Cards.*

4,385,671, Yamato Scale Co., Ltd., COMBINATION WEIGHING SYSTEM, **filed** Dec. 8, 1983, D.C., N.D. Calif. (San Francisco), Doc. C-83-5830 TEH, *Yamato Scale Co., Ltd.* v. *Package Machinery Co.*

4,385,724, Ramco Mfg., Inc., APPARATUS FOR CONTROLLING THE WATER TEMPERATURE OF A SPA, **filed** Aug. 4, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83 5049 MML (Mcx), *Ramco Mfg., Inc.* v. *Sundance Spas, et al.*

4,401,335, Byron L. Godbersen, BOAT HOIST, **filed** Nov. 3, 1983, D.C., E.D. Mich. (Bay City), Doc. 83CV7374BC, *Byron L. Godbersen* v. *Michigan Docks, Inc.* **Same, filed** Nov. 17, 1983, D.C., W.D. Mich. (Grand Rapids), Doc. G83-1352CA1, *Byron L. Godbersen* v. *Michigan Marine Distributing Co.* **Same, filed** Nov. 17, 1983, D.C., W.D. Mich. (Grand Rapids), Doc. G83-1353CA6, *Byron L. Godbersen* v. *Stevens Design & Fabrication, Inc.* **Same, filed** Nov. 17, 1983, D.C., W.D. Mich. (Grand Rapids), Doc. G83-1354CA1, *Byron L. Godbersen* v. *Harbor Master, Ltd.*

4,403,775, Joseph R. Chaput, RANDOM INDICIA SELECTOR, **filed** Sept. 13, 1983, D.C., W.D. Pa. (Pittsburgh), Doc. 83-2294, *Joseph R. Chaput, et al.* v. *J and R. Sales, Inc., et al.*

4,404,687, Markus Hager, CONVERTIBLE OUTERWEAR AND CARRYING BAG, **filed** Nov. 14, 1983, D.C., S.D.N.Y., Doc. 83-Civ-8247, *Franconia Sportswear, Inc. (Markus Hager)* v. *Anchas America, Ltd.*

4,406,615, Nova Patents of North America, Inc., IGNITER FOR A GAS DISCHARGE PIPE, **filed** Dec. 29, 1983, D.C., S.D. Tex. (Houston), Doc. H-83-7369, *Nova Patents of North America, Inc.* v. *Standby Flare Ignition Systems, Inc.*

4,413,737, Bigelow-Sanford, Inc., SHIPPING PALLET AND A PACKAGE FORMED THEREFROM, **filed** Dec. 21, 1983, D.C.S.C. (Greenville), Doc. 83-3224-14, *Bigelow-Sanford, Inc.* v. *Modular Packaging, Inc., et al.*

NOTICE OF RESTRUCTURING AND MOVE OF PATENT EXAMINING CORPS

The Patent Examining Corps is being restructured and moved to meet the needs of the public, changing technology and workload requirements.

The restructuring and move include three major aspects. The first major aspect involves hiring a large number of new examiners and a rebalancing of the Examining Corps to more accurately reflect anticipated workloads and better associate related arts. To this end, the five existing chemical groups will be rearranged into four chemical groups, i.e., Groups 110, 120, 130, and 150. In addition, a new electrical Group 260 will be assembled from components drawn from the other electrical groups.

The second aspect of current efforts involves the creation of twelve (12) additional art units to provide appropriate supervision for the enlarged Examining Corps. These new art units have been distributed throughout the Groups as dictated by anticipated supervisory workloads.

The third aspect involves the physical relocation of many persons and search files as Examining Group 150 moves into additional space on two floors in Building 2 in Crystal Plaza.

It is expected that the relocation and other changes will begin about March 19, 1984, and end by May 1, 1984. The Groups will then be located as shown in the table at the end of this notice.

The efforts described above will result in many examiners being moved to new rooms and some reassigned to different groups and art units. Many pending applications will be assigned to new groups and art units. The Office will do everything practical to minimize the adverse impact of all this change. However, problems and a certain amount of confusion will undoubtedly occur. To help the public cope with these changes, the following guidance is offered:

1. Examining Corps personnel can be reached on the telephone by calling their last known number (e.g., the number shown on the last Office action). The answering receptionist will be provided with a directory of phone numbers which will be updated daily. The caller will be informed of or transferred, if possible, to the new number.

2. Persons who are not successful in reaching an Office employee by telephone should call our information number (703)557-3080 for the latest telephone number of the employee.

3. To determine the current Group or art unit assignment or other pertinent information concerning a patent application (for those entitled to such information) call any telephone associated with the Group to which the application was assigned. The answering receptionist - once assured of the caller's identity and/or entitlement - will provide the current art unit assignment or the other pertinent information concerning the application as shown on the PALM system.

4. Once the new art unit assignment of an application is known, all correspondence involving that application should identify the new art unit. However, all correspondence addressed to the art unit shown on the most recent communication from the Office will be routed to the correct destination.

5. A current directory will be posted periodically in or near the Public Search Room.

6. After the relocations and other changes are completed, new Group and art unit telephone and room numbers will be published in the Official Gazette.

7. Persons delivering papers, arriving for interviews or visiting the Examining Corps after March 19, 1984, should consult the directory posted near the Public Search Room for the current location of the organization and person they are visiting.

Group	Director	Location	New Art Unit	New Art Unit Comprises Examiners Primarily From Following Original Art Unit(s)	New Art Unit Responsible For All Or Parts Of The Following Classes
110	D. Talbert	CP3-9	111	111	75,148,266,420,428
			112	112	204,252
			113	113	252,423
			114	114	29,148,136,429
			116	116	208,252,260,585
			118	113,124	44,71,106,252,501
120	C.E. Van Horn	CP2-9	121	121	260,542,544,546,548,549
			122	122	260,542,544,546,548,568
			123	123	260,424,536,549
			124	124	44,252,260,556,564,568,570
			125	125	8,260,424
			126	126	260,518,560,562,564,568
			127	174	424,435
			128	174	424,426,435,436
			129	121,122,126	71,260,544,546,548,549
130	R. White	CP3-8	131	161	156,252
			132	172	127,426
			133	173,	62,65,134,159,202,203
			134	172,173	23,156,210,422,436
			135	177	55,209,261
			136	176	210
			137	147	264
			138	147	48,156,196,201,202,249,425
150	J.O. Thomas	CP2-11	151	142	204,260,521,523,524,525,527,528
			152	162	118,148,427
			153	143	260,521,523,524,527,528
			154	164	282,428
			155	144	260,520,521,523,524,525,526,528,536
			156	166	428,430
			157	144,147 166	8,51,106,252,433,585
210	S. Engle	CP4-9	211	211	84,181,235,352,354,355,350,361
			212	212	310,320,322,323,363
			213	213	219,338
			214	216	200,307,314,361,373
			215	217	174,336,355,361
			216	212,216	177,335,337,346
			217	217	84,187,290,318,368
220	K. Cage	CP4-10	221	221	42,89,102,114,184,244,362,367,376
			222	222	178,179,181,310,315,330,332,340, 343,356,358,367,375,376,434,435
			223	223	44,60,75,86,136,148,149,204,252, 260,264,362,419,422,423,424,427, 428,436,568

Group	Director	Location	New Art Unit	New Art Unit Comprises Examiners Primarily From Following Original Art Unit(s)	New Art Unit Responsible For All Or Parts Of The Following Classes
230	E. Levy	CP4-11	232	232,236	340,364
			233	235	235,360
			234	232,237	235,340,364
			235	235	179,358,360,369
			236	236	364
			237	237	364,381
240	G. Forlenza	CP4-7	241	241	150,190,206,215,217,220,229,383
			242	242	8,15,68,99,100,226,366,494
			243	243	134,138,141,200,224
			245	245	57,87,242,254,308,384,464
			246	246	33,73,116,277,353,374,369
			247	353	2,12,19,26,28,36,38,66,69,112, 128,139,223,289
250	S. Matthews	CP4-8	251	251,254,255	343,350,356,372
			252	252,254,256	329,330,331,332,333,334
			253	253	357
			254	254	307,328,377
			255	255	250,356
			256	256	250,378
			257	257	350,351
260	S. Kunin	CP4-5	261	214	178,179,358,381
			262	231	358
			263	233	370,375,455
			264	234	340,367
			265	244	73
			266	251	313,315,328,382
			267	252	324
			268	234,244	73,340,367
290	K. Cage	CP4-11	291	291	Design
			292	292	Design
310	B. Gray	CP3-5	311	311	133,186,187,194,221,222,258,278
			312	312	104,105,152,191,209,213,238,246, 291,293,295,296,301,305,410
			313	313	169,193,239,294,406
			314	314	188,267,271,303
			315	315	114,212,244,440,441
			316	316	180,280
			317	317	198,298,414
320	S. Zaharna	CP3-6	321	321	10,29,59,72,82,140,142,144,407,413
			322	322	29,279,339,408,409
			323	323	7,29,51,76,81,125,145,157,254,269
			324	324	16,30,83,173,225,234
			325	325	43,164,228,445
			326	326	29,79,147,163,241,300
			327	327	17,53,227,281,282,282,402,412,493

Group	Director	Location	New Art Unit	New Art Unit Comprises Examiners Primarily From Following Original Art Unit(s)	New Art Unit Responsible For All Or Parts Of The Following Classes
330	R. Aegerter	CP3-4	331	331	27,46,47,63,111,124,135,168,171, 172,231,272
			332	332	3,124,128,131,132,272,401
			333	333	6.40,54,56,109,119,130,232,433
			334	334	273,434
			335	335	128
			336	336	128
			337	337	37,101,199,276,400
340	D. Stocking	CP4-3	341	341	60,91,92,415,416
			342	342	123
			343	343	60,91,417,418
			344	344	34,62,98,110,122,236,237,432
			345	345	126,431
			346	346	60,123,160
			347	347	137,251
350	A. Smith	CP3-3	351	351	256,285,403,405
			352	171,352	74,185,192
			354	354	52
			355	355	160,182,211,248
			356	356	14,166,175,299,404,474
			357	357	24,49,108,297,312
			358	358	5,70,74,109,292,411

Any questions concerning the Corps restructuring should be addressed to Edward E. Kubasiewicz at (703)557-4281.

PLEASE NOTE: PERSONS WHO ARE NOT SUCCESSFUL IN REACHING AN OFFICE EMPLOYEE BY TELEPHONE SHOULD CALL OUR INFORMATION NUMBER (703)557-3080 FOR THE LATEST TELEPHONE NUMBER OF THAT EMPLOYEE.

Rene D. Tegtmeyer

Rene D. Tegtmeyer
Assistant Commissioner for Patents

2/24/84
Date

PATENT NOTICES

Certificates of Correction for the Week of Mar. 13, 1984

D. 247,221	4,375,541	4,401,185	4,413,685
D. 265,550	4,376,664	4,401,724	4,414,429
D. 265,936	4,377,785	4,402,289	4,414,539
3,576,673	4,380,484	4,402,448	4,414,704
4,117,118	4,380,741	4,402,682	4,414,829
4,157,759	4,381,335	4,403,076	4,415,014
4,205,964	4,382,739	4,403,233	4,415,279
4,232,723	4,383,158	4,403,552	4,415,286
4,238,531	4,384,199	4,404,717	4,415,486
4,267,111	4,384,298	4,405,521	4,415,758
4,290,154	4,384,348	4,406,623	4,415,886
4,308,213	4,386,127	4,407,203	4,417,141
4,313,909	4,386,966	4,407,813	4,417,920
4,320,119	4,390,797	4,408,002	4,418,462
4,327,133	4,393,262	4,408,404	4,418,768
4,337,079	4,394,177	4,408,452	4,419,249
4,350,275	4,394,330	4,408,607	4,419,721
4,351,466	4,394,517	4,409,048	4,419,796
4,353,306	4,394,542	4,409,990	4,420,220
4,353,450	4,395,459	4,410,003	4,421,314
4,358,511	4,395,546	4,410,956	4,421,386
4,360,573	4,396,424	4,411,761	4,421,678
4,367,082	4,396,953	4,412,080	4,421,782
4,369,516	4,399,913	4,412,086	4,422,031
4,372,248	4,400,083	4,412,281	4,422,180
4,375,426	4,401,151	4,413,423	4,422,443

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public L ibrary	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis—Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 704-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1321
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372 1 (901)
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Texas	Austin: McKinney Engineering Library, University of Texas	
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551 (214) 749-4176
	Dallas Public Library	(713) 527-8101 Ext. 2587
	Houston: The Fondren Library, Rice University	(206) 543-0740
Washington	Seattle: Engineering Library, University of Washington	
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845 (414) 278-3043
	Milwaukee Public Library	

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF February 4, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action

CHEMICAL EXAMINING GROUPS

GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director 5-20-82
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.

GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director 7-16-73
Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.

HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director 9-15-82
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.

COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director 7-26-82
Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.

SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—
R. F. WHITE, Director 1-16-76
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.

ELECTRICAL EXAMINING GROUPS

INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director 1-03-82
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.

SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director 6-01-81
Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.

INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director 7-06-81
Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.

RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—
G. M. FORLENZA, Director 3-17-82
Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.

ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director 9-30-80
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.

DESIGN, GROUP 290—KENNETH L. CAGE, Director 1-14-71
Industrial Arts; Household, Personal and Fine Arts.

MECHANICAL EXAMINING GROUPS

HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director 6-04-81
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.

MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director 6-18-82
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.

AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—
R. E. AEGERTER, Director 11-04-76
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.

HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director 5-26-81
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.

GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—
A. L. SMITH, Director 3-20-81
Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.

Expiration of patents: The patents within the range of numbers indicated below expire during February 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,302,213 to 3,307,199, inclusive
Plant Patents ..... Numbers 2,707 to 2,722 inclusive

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,535

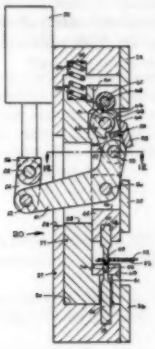
SPOT CLINCH MEANS AND METHOD

Louis C. Schleicher, 1917 Marcastle Ct., Rochester, Mich. 48063

Original No. 3,900,937, dated Aug. 26, 1975, Ser. No. 494,982, Aug. 5, 1974. Application for reissue Mar. 7, 1977, Ser. No. 774,851

Int. Cl.[3] B23P *19/00*

U.S. Cl. 29—432.2 8 Claims



1. Spot clinch tool for forming a spot clinch joint by lancing and swaging two or more materials together using one complete stroke of a *ram driven by a* power source in a single station, [said power source having a power stroke and a retract stroke,] said tool *having a tool body and* utilizing an anvil, die, and punch *ram moving* means [for moving] *connecting said ram to said power source so that said ram is driven in a power stroke and a retract stroke, means joining* one of said punch and anvil *to said ram and the other to said tool body, whereby one is made moveable* while [maintaining] the other *is maintained* stationary *in respect to said tool body* during said complete stroke of said [power source] *ram*, [means for moving] *and cam means coupled to said ram moving means responsive to the stroking movement of said ram for controlling positioning of said die relative to said anvil and punch during said complete stroke of said ram, said* one of said punch and anvil *being moved* toward the other during a first part of said power stroke, [means for piercing] said materials *being pierced* with said punch and die to lance them during a second part of said power stroke, [means for holding the] *said cam means controlling positioning of said* die in a first position [spaced from the] *stationary in respect to said* anvil during both said first and second parts of said power stroke, [means for moving the] *said cam means controlling movement of said* die *from said first position* to a second position *stationary* in respect to said anvil during a third part of said power stroke, [means for swaging] the lanced portions of said materials *being swaged* with said punch and anvil during a fourth and final part of said power stroke, [means for maintaining the] *said cam means controlling positioning of said* die [and the anvil] in said second position *stationary in respect to said anvil* during said fourth and final part of said power stroke and during a first part of said retract stroke, and [means for moving] *said cam means controlling movement of* said die relative to said anvil from said second position to said first position during a second and final part of said retract stroke, *means for holding said die including a moveable die retainer for holding the die, said cam means being actuated to control movement of said die and die retainer from said first to said second position by the continued movement of said ram in said third part of said power stroke, and said cam means being actuated to control movement of said die and die retainer from said second to said first position by the continued movement of said ram in said second and final part of said retract stroke.*

Re. 31,536

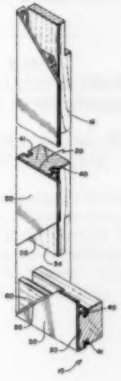
METAL CLADDED WINDOW PRODUCTS

Joseph W. Holdiman, 1095 Arrowhead Dr., Dubuque, Iowa 52001, and Douglas E. Justice, 1103 Ellen, Cedar Falls, Iowa 50613

Original No. 4,207,707, dated Jun. 17, 1980, Ser. No. 925,162, Jul. 17, 1978. Application for reissue Jun. 1, 1982, Ser. No. 383,461

Int. Cl.[3] E06B *3/00*

U.S. Cl. 49—501 11 Claims



8. *A metal clad window product comprising:*

a plurality of elongated members interconnected to form the configuration of a window frame or sash, each of said elongated members having front and rear surfaces and first and second sides located between said front and rear surfaces and a rabbet extending in each of said first and second sides for the length of said elongated member;

a metal cladding member coupled to each of said elongated members to form a metal cladding surface over the front surface of each elongated member, said metal cladding member including a metal member having a width and length sufficient to cover said front surface wherein said cladding member is in full contact with said front surface, first and second flanges integrally formed on said metal member so that said flanges are spaced from one another and each extend the length of said metal member, and a metal extension integrally formed with said metal member adjacent one of said flanges and extending the length of said metal member adjacent to the first side of said elongated member;

each metal cladding member being coupled to one of said elongated members prior to their interconnection to form said configuration solely by slidably engaging said flanges in said rabbets from one end of the elongated member until the metal member is positioned over the front surface of said elongated member along the entire length and width of the elongated member;

each metal cladding member being formed to have mitered ends which fit to form a mitered joint with adjacent metal cladding

members on the elongated members forming said configuration; and

sealing material positioned between said metal member and said elongated member along each mitered joint to seal said mitered joints.

Re. 31,537

DENTAL HANDPIECE CONNECTOR

Lloyd P. Flatland, 15 Quisisana Dr., Kentfield, Calif. 94904

Original No. 4,177,564, dated Dec. 11, 1979, Ser. No. 887,864, Mar. 20, 1978. Application for reissue Dec. 3, 1981, Ser. No. 327,289

Int. Cl.³ A61C 1/10

U.S. Cl. 433—82 **11 Claims**

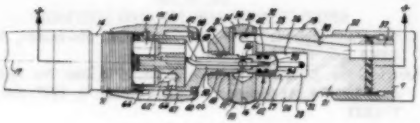
8. A dental handpiece and fluid supply tube connector, comprising:

a first base;

a second base;

pin means connecting the bases for rotating the bases relative to each other transversely to the longitudinal axis of the first base;

means defining at least two fluid passageways through the first base, the pin means and the second base; one fluid passage-



way passing radially through the pin means and the other fluid passageway passing axially through the pin means; and means for rotating the bases relative to each other about the longitudinal axis of the first base.

PLANT PATENTS

GRANTED MARCH 13, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,203

EXACUM AFFINE POT PLANT

Erik Rosendal, Assens, Denmark, assignor to Nurserymen's Exchange, San Francisco, Calif.

Filed Feb. 16, 1983, Ser. No. 467,076
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of Exacum plant as shown and described, characterized by its double flowers, its floriferousness, its blooming habits and the sterility of the flower. Plants can be propagated by asexual processes true to type and the rooting ability is excellent. The size of the single flower surpasses the known single cultivars.

5,204

CARNATION NAMED MINTOP

Siegfried Klemm, Hanfacker 9, 7000 Stuttgart 50, Fed. Rep. of Germany

Filed Jul. 26, 1982, Ser. No. 401,562
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—70 1 Claim

1. A new and distinct varity of carnation plant, substantially as herein shown and descried, characterized by its high productivity of bright pink flowers borne singly on rigid, generally upright pedicels carried in spray arrangement on a sturdy upright peduncle, the flowers being characterized by having petals which have ruffled margins of clear white.

5,205

CARNATION NAMED KLEMORAC

Siegfried Klemm, Hanfacker 9, 7000 Stuttgart 50, Fed. Rep. of Germany

Filed Jul. 26, 1982, Ser. No. 401,563
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—70 1 Claim

1. A new and distinctive carnation cultivar, substantially as herein shown and described, characterized by its high productivity of bright orange colored flowers borne singly on rigid, erect pedicels carried in spray arrangement by a sturdy upright peduncle.

5,206

CARNATION NAMED KLERONSTAR

Siegfried Klemm, Hanfacker 9, 7000 Stuttgart 50, Fed. Rep. of Germany

Filed Jul. 26, 1982, Ser. No. 401,963
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—70 1 Claim

1. A new and distinct carnation cultivar, substantially as herein shown and described, characterized by its high productivity of bright orange colored flowers having fan-shaped petals with few short red stripes extending longitudinally inward from the petal tips, the flowers being borne singly on rigid and erect pedicels carried in spray arrangement on a sturdy, upright peduncle.

PATENTS

GRANTED MAR. 13, 1984

ERRATA

For CLASS	See PATENT NO.
428–595	4,436,518
562–519	4,436,889
156–332	4,436,896
544–238	4,436,921

PATENTS

GRANTED MARCH 13, 1984

GENERAL AND MECHANICAL

4,435,851

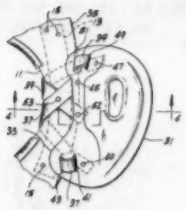
FLAP HINGE FOR A SHOULDER PAD

Hal D. Mitchell, and Donald R. Walker, both of Rolla, Mo., assignors to Figgie International Inc., Willoughby, Ohio

Filed May 14, 1982, Ser. No. 378,140

Int. Cl.³ A41D *13/00*

U.S. Cl. 2—2 **19 Claims**



1. In a shoulder pad of the type comprising a pair of arches adapted to overlie the inner parts of the shoulders of the wearer, the arches having laterally-spaced inner edges providing an opening for the neck of the wearer, and a pair of flaps adapted to extend in front-to-back direction over the shoulders for protecting the outer parts of the shoulders, an improvement comprising a flap hinge for hinging each flap to a respective arch for enabling the flap to swing upwardly about the hinge upon upward movement of the outer part of a respective shoulder, said flap hinge comprising a first strap secured at one end to a respective flap generally adjacent the front of the flap and extending from the flap under the arch to the inner edge of the arch, up around the inner edge of the arch, and thence over the arch back to the flap for securement at its other end to the flap, and a second strap secured at one end to the flap generally adjacent the back of the flap and extending from the flap under the arch to the inner edge of the arch, up around the inner edge of the arch, and thence over the arch back to the flap for securement at its other end to the flap.

4,435,852

GOGGLE

Todd G. Nesler, 2480 Doris, Brighton, Mich. 48116

Filed Nov. 24, 1982, Ser. No. 444,321

Int. Cl.³ A61F *9/02*

U.S. Cl. 2—436 **5 Claims**

1. A goggle comprising:

a frame having a front side and a rear side,

a transparent lens secured across the first side of said frame,

means for detachably securing said frame to a head of a user so that said rear side of said frame abuts against the head of the user and thus forming a chamber between said frame, lens and the head of the user,

at least one ventilation port formed through said frame and open to said chamber,

at least one elongated ventilation channel, said channel open at each end and only each such end and defining a fluid passageway between its ends, said channel secured to and extending rearwardly from said frame,

wherein one end of said channel is open to said chamber and,

wherein the other end of said channel faces rearwardly from the rear side of said frame and is open at a position spaced rearwardly from the rear side of said frame.

4,435,853

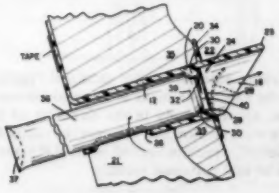
VOICE PROSTHESIS DEVICE AND PLACEMENT TOOL THEREFOR

Eric D. Blom, and Mark I. Singer, both of Indianapolis, Ind., assignors to Hansa Medical Products, Inc., Indianapolis, Ind.

Filed Apr. 30, 1982, Ser. No. 373,635

Int. Cl.³ A61F *1/20*; A61B *17/00*

U.S. Cl. 3—1.3 **8 Claims**



1. A voice prosthesis device for placement in a fistula to channel air from a tracheostoma to the esophagus including in combination:

a cylindrical housing having a proximal end with strap means extending outwardly therefrom, a distal end, a port therein operatively cooperating with the tracheostoma, with said distal end having a beveled extension integral therewith,

one-way valve means including an annular sealing rim positioned perpendicularly within said housing adjacent said distal end and a valve membrane hingedly mounted to said housing on the side thereof adjacent said distal end of said housing to cooperate with said annular sealing rim, and

an annular collar means extending outwardly from said housing, said annular collar means adapted to abut against the esophagus tissue when the device has been positioned in the fistula, to retain and hold the device in proper position, such that upon covering the tracheostoma opening, said valve membrane is moved by the channeled air from the closed position against said annular sealing rim to an open position wherein the channeled air enters the esophagus to produce alaryngeal speech by the patient.

4,435,854

HIP JOINT PROSTHESIS WITH A SHAFT TO BE FITTED INTO THE MEDULLARY CANAL OF THE FEMUR

Arnold Keller, Kaihude, Fed. Rep. of Germany, assignor to Waldemar Link GmbH & Co., Hammberg, Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,776

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1980, 3015690

Int. Cl.³ A61F *1/04*

U.S. Cl. 3—1.913 **2 Claims**

1. In a hip joint prosthetic device comprising a rigid shank to be fitted into the medullary canal of the femur, a head, a end flange at the proximal end of the shank, a head and a neck

section extending from the end flange to the head, the head being anteverted relative to the shank in the LM (lateral-medial) plane, the improvement wherein the shank has, in the proximal region thereof, a section extending a distance between approximately 4–8 cm from the end flange which is curved in the AP (anterior-posterior) plane with a center of curvature in

the AP plane anterior of the proximal region of the shank, wherein the axis of the shank at its proximal end extends, in the AP plane, approximately in the direction of the longitudinal axis of the neck section and wherein the shank has, in the distal region thereof, a section curved in the AP plane in the opposite direction to said proximal section.

4,435,855

UNIVERSAL INTRAOCULAR LENS AND A METHOD OF MEASURING AN EYE CHAMBER SIZE

Juswant S. Pannu, 6120 Almond Ter., Plantation, Fla. 33317

Continuation-in-part of Ser. No. 136,243, Apr. 1, 1980, abandoned. This application May 8, 1981, Ser. No. 261,953

Int. Cl.³ A61F *1/16, 1/24;* **A61B** *5/00*

U.S. Cl. 3—13 **10 Claims**

1. An intraocular lens comprising:

a lens body;

at least two spaced flexible positioning and supporting elements integrally formed with said lens body as a one-piece construction and extending radially, outwardly from the periphery of said lens body;

said elements defining a continuous, substantially circular arc having a diameter greater than the diameter of said lens body, said arc curved toward said lens circumference and terminating in a free end spaced from said periphery; and

snag-resistant means integrally formed on the free end of said elements for smoothly guiding and positioning the lens across contacted eye tissue when implanting the lens, said snag resistant means having an uninterrupted, continuously, smoothly curved outer periphery which merges with said free end and is substantially greater in size than the width of said flexible elements.

10. A method of measuring the size of an eye chamber by implanting a lens having tangentially resilient strands on opposed sides of an intraocular lens attached to the body of said lens; wherein the free end is connected to a snag resistant ring, adding the diameter sizes of said ring and said lens to the distance between the edge of said ring and the edge of said lens in mm. to determine the size of said eye chamber in mm.

4,435,856

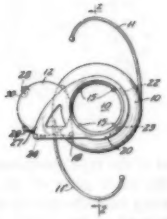
BIFOCAL INTRAOCULAR LENS STRUCTURE AND SPECTACLE ACTUATION FRAME

Francis A. L'Esperance, 255 Oakwood Rd., Englewood, N.J. 07631

Filed Apr. 14, 1982, Ser. No. 368,409

Int. Cl.³ A61F *1/16, 1/24*

U.S. Cl. 3—13 **24 Claims**



1. Intraocular lens structure, comprising a first lens element including haptic means for stabilized mounting of the lens in one of the chambers of an eye and substantially on the pupillary axis of the eye, a second lens element, means coacting between off-axis locations of said lens elements for pivotally suspending said second lens element at axial offset with respect to said first lens element, means coacting between said lens elements for selective retention of (1) a pivoted position of said second lens element wherein the optical axes of said lens elements are in substantial registration and (2) a pivoted position of said second lens element wherein said second lens element is substantially offset from the axis of said first lens element, and means associated with said second lens element and adapted to facilitate selective pivoted displacement from one to the other of said positions.

4,435,857

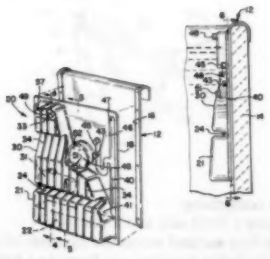
APPARATUS FOR CLEANSING AND DISINFECTING TOILET TANKS AND BOWLS

Gilbert K. Meloy, Earlville, Ill., assignor to Twinoak Products, Inc., Plano, Ill.

Filed Apr. 2, 1982, Ser. No. 364,786

Int. Cl.³ E03D *9/02*

U.S. Cl. 4—228 **19 Claims**



1. An apparatus for automatically cleansing and disinfecting a toilet tank and toilet bowl by treating the water discharged

from the toilet tank each time the toilet is flushed, said apparatus comprising means for placing the apparatus in a toilet tank, a reservoir, a source of disinfectant soluble in water located in said reservoir, a volume control chamber communicating with said reservoir, a delivery tube vented to the atmosphere, a dispensing orifice defined by the delivery tube, and a passage defined between said delivery tube and said reservoir, said orifice being located beneath the normal level of water in the tank when the apparatus is placed in the tank whereby water is introduced through said orifice, the water than passing into said reservoir and into said volume control chamber and rising to the level of water in the tank, said delivery tube then being in dynamic fluid communication with water in the toilet tank, and wherein flushing of the toilet results in dropping of the water level in said tank whereby the head of water in said volume control chamber forces a dose of aqueous disinfectant solution into said tank.

4,435,858

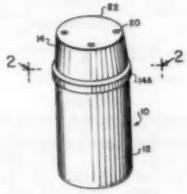
AUTOMATIC TOILET BOWL CLEANING DEVICE

John E. Dolan, 15 New Main St., Haverstraw, N.Y. 10927

Filed Jul. 6, 1982, Ser. No. 395,123

Int. Cl.³ E03D *9/02*

U.S. Cl. 4—228 **5 Claims**



1. An automatic toilet bowl cleaning device adapted to dispense water-soluble disinfectant into the flushing water of a toilet tank comprising:

(a) a container for the disinfectant;

(b) a cover, consisting of a single shell, fitted on the container, said cover having a top wall and a side, or peripheral, wall; a first series of at least three spaced holes extending through the top wall of said cover and a second series of at least three spaced holes extending through the side, or peripheral, wall of said cover;

(c) the total area of all of the spaced holes of the second series being less then the total area of all of the spaced holes of the first series, all of the spaced holes of the second series being arranged solely in one-half of the cover, while all of the spaced holes of the first series are arranged solely in the diametrically opposite half of the cover;

(d) whereby the disinfectant solution formed within the container is consistently dispensed due to the increased mixing action of the solvent with the solid disinfectant.

4,435,859

TOILET FLUSH TANK

Reinhard Barnowski, Hauptstrasse 252, 5163 Langerwehe, Fed. Rep. of Germany

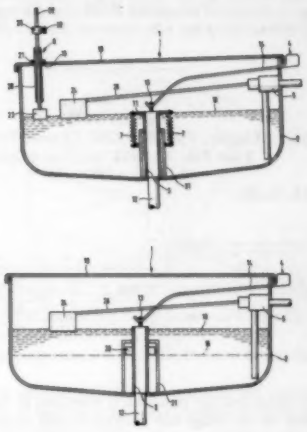
Filed Feb. 18, 1982, Ser. No. 350,026

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1981, 3106764

Int. Cl.³ E03D *1/14, 3/12*

U.S. Cl. 4—324 **3 Claims**

1. A toilet flush tank apparatus having a water reservoir, said apparatus being selectively actuable to fully empty said reservoir or to automatically interrupt emptying of said reservoir at an intermediate level, a float activated water feed valve in said reservoir, a drain closure part, movable means reacting against said closure part in the filled condition of said reservoir to close the latter, an actuator device to shift said movable means away from said closure part, said actuator device being shiftable between first and second positions, said actuator device in its first position releasing said movable means and in said second position lifting said movable means clear of said drain part, the combination including automatic means for returning said



movable means to closing position of said drain when said actuator device is shifted from said first to said second position and thereafter released to said first position, said automatic means being responsive to the water level in said tank reaching an intermediate level between full and empty to effect said return movement to said movable means.

4,435,860

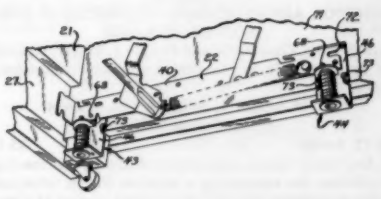
SPRING SUSPENSION FOR SOFA-BED

Thomas H. Talley, Downers Grove, Ill.; Lee W. Sheets, Muney Valley, Pa., and Alvin F. Wiley, Rushville, Ind., assignors to Schnadig Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 145,356, Apr. 30, 1980, abandoned. This application Feb. 5, 1981, Ser. No. 231,619

Int. Cl.³ A47C *17/04*

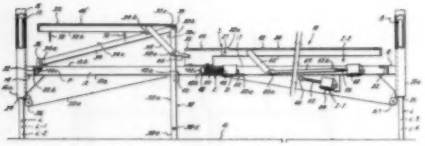
U.S. Cl. 5—13 **13 Claims**



1. In a sofa-bed having a sofa frame and a folding bed frame, the sofa frame having a front, a pair of sides, and a back, the bed frame being foldable between a sitting position in which the bed frame is confined within the sofa frame and a sleeping position in which the bed frame extends forwardly from the sofa frame, the improvement comprising spring suspension means for resiliently supporting the bed frame on each of the sides of the sofa frame, each of the spring suspension means comprising a first mounting bracket attached to the sofa frame, a second mounting bracket attached to the bed frame, and resilient connecting means extending between the first and second brackets for movably and resiliently supporting the second mounting bracket relative to the first mounting bracket,

the sofa-bed including a seat cushion supported by the bed frame when the bed frame is in the sitting position and including four of said spring suspension means for resiliently supporting the bed frame generally below the front and rear of the seat cushion on each side of the sofa frame, the resilient connecting means of each of the spring suspension means including a tube attached to one of the mounting brackets and slidably connected to the other mounting bracket and a compressible coil spring surrounding the tube between the two mounting brackets.

4,435,861
LEDGE BED
William L. Lindley, P.O. Box 1292, Conroe, Tex. 77301
Filed Feb. 25, 1982, Ser. No. 352,348
Int. Cl.³ A61G 7/00
U.S. Cl. 5—65 **10 Claims**



1. A ledge bed for positioning a bedpan or bathtub beneath a patient on the ledge bed without having to physically lift or move the patient, comprising:

a main frame;

floor engaging support legs telescopically connected to said main frame;

a foot mattress support adjustably connected to said main frame;

an head mattress support pivotally connected to said main frame;

elevation means with said main frame for raising and lowering said main frame on said telescopically connected support legs; and,

a stiff leg assembly pivotally connected to said head mattress support whereby when said stiff leg assembly is vertically positioned and said main frame is lowered, said stiff leg assembly will engage the floor surface whereupon said head mattress support will form a ledge vertically displaced above said foot mattress support.

4,435,862
CONTROL ARRANGEMENT AND METHOD FOR AN ADJUSTABLE BED
Frank R. King, Glen Mills, and Donald J. Engler, Upland, both of Pa., assignors to Simmons Universal Corporation, New York, N.Y.
Filed Oct. 19, 1981, Ser. No. 312,528
Int. Cl.³ A61G 7/06
U.S. Cl. 5—66 **15 Claims**

2. In a motor driven adjustable bed having mattress supporting portions for supporting a mattress for an occupant in a variety of positions and including a head portion at a head end of the bed, a foot portion at a foot end of the bed, and a thigh portion between the head and foot portions,

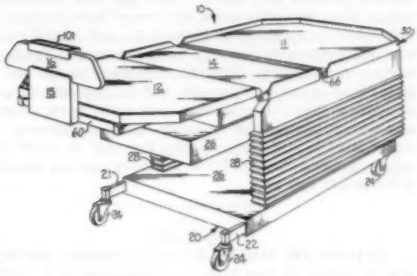
frame means for supporting the mattress supporting portions, and

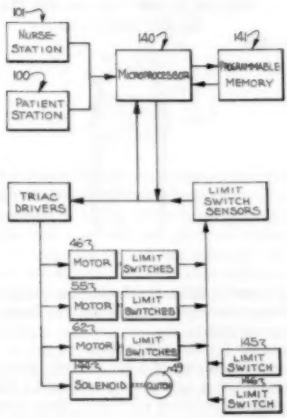
position controlling mechanism operatively interconnecting the mattress supporting portions and the frame means and including a plurality of motors operatively connected with the frame means for moving the frame means and thereby for positioning the mattress supporting portions in desired positions,

an improvement in said position controlling mechanism which facilitates control over movement of the bed into a variety of positions and comprising:

command means actuable by an operator of said bed for generating command signals indicative of selected bed positions,

programmable memory means for receiving and storing control signals indicative of allowed and disallowed movements, and





processor means operatively communicating with said command means and with said programmable memory means and with said motors and responsive to said command signals and to said control signals for actuating at least one of said motors for moving said frame means toward an allowed, selected bed position.

4,435,863
PATIENT TRANSPORTING DEVICE
Joel Lerich, 1418 W. Oak St., Ft. Collins, Colo. 80521
Filed Aug. 21, 1981, Ser. No. 295,226
Int. Cl.³ A61G 7/10
U.S. Cl. 5—81 B **21 Claims**

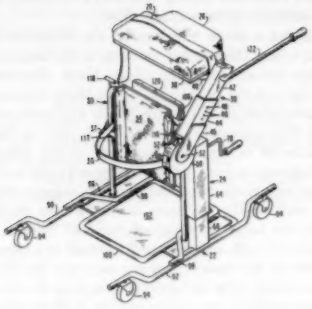
1. A patient transporting device comprising:

a support projecting upwardly from a base;

a chest pad shaped and oriented to fit against the upper torso of the user when the lower torso of the user is positioned beneath said chest pad;

and a linkage assembly coupling said chest pad to said support and including means for enabling swinging of said chest pad effectively about a horizontal axis, with said upper torso secured to said chest pad, from a first position in which said chest pad is swung outwardly away from said support to permit engagement of said chest pad with said upper torso when said lower torso is positioned beneath said chest pad and a second position in which said

chest pad has been swung by said linkage assembly to a stable location above said linkage assembly to have moved



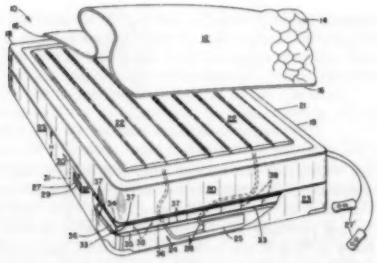
upwardly said upper torso with said lower torso remaining beneath said chest pad.

4,435,864

AIR BED ARRANGEMENT

Milton A. Callaway, Jackson, Oreg., assignor to Simons U.S.A. Corporation, Atlanta, Ga.

Filed Jun. 22, 1981, Ser. No. 275,958
Int. Cl.³ A47C 27/10
U.S. Cl. 5—453 **15 Claims**



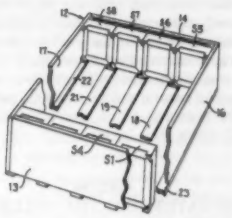
1. A mattress foundation designed to be used in combination with an accompanying inflatable mattress, comprising a primary support structure for supporting a mattress and any loads imposed thereon; a compartment defined with said support structure; and an air compressor positioned within said compartment, said primary support structure including a first area of support structure extending for substantially the full height of the mattress foundation and a second area of support structure extending from the top surface of the foundation to only a portion of the full height of the mattress foundation, said compartment being positioned below said second area of said support structure, said first area including a first inflatable support structure extending for substantially the full height of the mattress foundation, and said second area including a second inflatable support structure extending from the top surface of the foundation to only a portion of the full height of the mattress foundation.

4,435,865

FRAME FOR COMB HONEY

John A. Hogg, 2225 S. 36th St., Galesburg, Mich. 49053

Continuation-in-part of Ser. No. 120,951, Feb. 13, 1980. This application Sep. 15, 1981, Ser. No. 302,273
The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.
Int. Cl.³ A01K 47/02, 47/04
U.S. Cl. 6—2 R **16 Claims**



1. In a device for producing comb honey in a hive having a hive body, the combination comprising:

a super for superposing on the hive body and having ends and sides;

a plurality of separate comb sections positioned within said super, each of said sections having perimeter components with top and bottom edges;

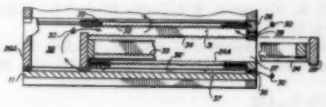
means for inducing bees to build comb only in one direction within a said section and to a predetermined depth therein, wherein each of said sections has a bottom wall connecting the bottom edges of said perimeter components, said bottom wall has a foundation surface facing into its said section, the top of one section is adjacent the bottom wall of the next section, and means project from the top of said one section in cooperative relation with the bottom wall of the next section for permitting bee access and effecting comb depth control in said one section.

4,435,866

PELLEN TRAP FOR BEEHIVES WITH DUAL ENTRANCEWAYS

Royden Brown, 4343 E. Keim Dr., Phoenix, Ariz. 85253

Filed Mar. 4, 1982, Ser. No. 354,882
The portion of the term of this patent subsequent to Jul. 6, 1999, has been disclaimed.
Int. Cl.³ A01K 47/06
U.S. Cl. 6—4 R **10 Claims**



1. A pollen trap for collecting pollen from bees as they enter a beehive comprising:

a frame having an open top and dimensioned to fit as one of the axially positioned parts of a vertically stacked beehive,

a drawer slidably arranged in said frame to assume a substantially horizontal position in the hive,

said drawer having a bottom surface comprising a first screen, the mesh size of which is smaller than the pollen dropped thereon by the bees,

a second screen mounted in said frame above said drawer and having a mesh size smaller than the size of the pollen carrying bees for prohibiting them from entering the drawer,

a pair of parallel and spacedly arranged third and fourth

screens mounted on said frame, but offset above said second screen and forming an elongated space between said second screen and said pair of screens,

said third and fourth screens having mesh openings offset from each other causing bees crawling through said pair of screens to be forced to follow a circuitous path, divesting their legs of a substantial portion of the pollen carried thereon,

a first entranceway for the pollen carrying bees into the pollen trap positioned adjacent the front and above said drawer and connected with one end of said space between said second screen and said pair of screens, and

a second entranceway for the pollen carrying bees into the pollen trap positioned adjacent the front and below said drawer and connected with another end of said space between said second screen and said pair of screens,

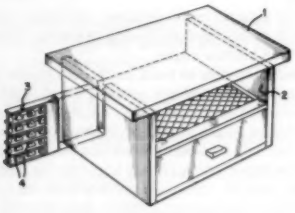
whereby the bees may move through said pair of screens at points all along their lengths.

4,435,867

DEVICE FOR GATHERING THE POLLEN FROM A BEE

Tae S. Jeong, 1184, Hwanghak-dong, Jung-ku, Seoul, Rep. of Korea

Filed Apr. 19, 1982, Ser. No. 369,663
Int. Cl.³ A01K *47/06*; B32B *3/10*
U.S. Cl. 6—4 R **9 Claims**



1. A device for gathering pollen from bees entering a beehive comprising a pollen collecting screen having a plurality of entrances for passage of said bees therethrough each of said entrances having a wider upper section through which the body of the bee is to pass and a substantially square narrow lower section through which the legs of the bees pass to be contacted by the portion of the screen forming said narrow section to remove the pollen from the legs of the bee.

4,435,868

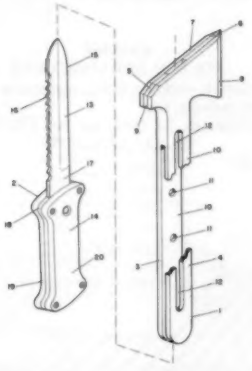
HIKER'S HATCHET

Sidney J. McQueen, 414 Coors Blvd. SW., Albuquerque, N. Mex. 87105

Continuation-in-part of Ser. No. 189,579, Sep. 23, 1980, abandoned. This application Apr. 2, 1982, Ser. No. 365,035
Int. Cl.³ B26B *11/00*
U.S. Cl. 7—158 **2 Claims**

1. A combination tool comprising: a hatchet having a left side, a right side, a hammer spacer and an edge spacer, wherein the left side and the right side, each are flat plates shaped to a hatchet head and having integrally formed therewith a hatchet handle, being straight, the extremity of each of the hatchet handles being rounded: and wherein the hatchet head has a blade and a hammer end: and wherein the hammer spacer is a flat plate shaped to the contour of the hammer end, but extends from the hammer end toward the blade edge only to an extension of the line defining the nearest edge of the handle; and wherein the edge spacer is shaped to the contour of the blade but extends from the blade toward the hammer and only to an extension of the line defining the nearest edge of the handle; and wherein the left side handle has a plurality of stop holes along its length; and wherein the right side hndle has a longitudinal slot running from the vicinity of the hatchet head toward the extremity of the handle; and wherein the edge spacer and hammer spacer are the same thickness; and wherein the hammer spacer and edge spacer are placed between the left hand side and right hand side during assembly and rigidly and permanently assembled as by welding; and

a knife having a blade and handle; the blade being a flat member whose thickness is the same as the hammer spacer and edge spacer: one edge of the blade sharpened to a knife edge and the other edge of the blade sharpened to a saw tooth edge, both the saw tooth and knife edges extending approximately one-half the length of the blade, the remainder of the blade being the shank, wherein the shank has two ears one on each edge adjacent to the knife edge and saw tooth edge, and two ears adjacent end of the shank, each of the said ears having a hole therein; and wherein the handle consists of two half handles, a right half and a left half, and the handle shaped to a comfortable grip; and the half handles having ears near the blade edge and saw tooth edge and having ears near the end of the shank said ears on the handle mating with the ears on the shank; and each said half handle having a flat wide groove on its inner faces, and a button hole from the inner surface to the outer surface; and each said half handle having a spring depression longitudinally aligned with the button hole, and a screw hole axially aligned and between the button hole and screw hole, and a cross shaped recess in



the vicinity of the button hole, screw hole, and spring depression, said cross shaped recess having a pivot crown tranverse to the half handle, and the right half handle having pivotally installed in the flat wide groove on its inner surface in the recess, a pivot latch; said pivot latch having an oblong attaching hole, a lock stud sized to fit easily into the stop holes, and a button which protrudes through the button hole, said pivot latch being pivotally installed by a screw which slideably passes through the oblong attaching hole and threadably engages the screw hole; said pivot latch being biased such that the lock stud engages the stop holes; and a biasing means installed in the right half handle between the lock stud and the spring depression; and the left half handle having pivotally installed in the flat wide groove on its inner surface in the recess another pivot latch; said pivot latch installed on the left half handle having an oblong attaching hole, a lock stud sized to fit easily into the longitudinal slot, and a button which protrudes slightly less than flush with the outside of the left half handle, said pivot latch installed in the left half handles by a screw which slideably passes through the oblong attaching hole and threadably engages the screw hole; and said pivot latch being biased such that the lock stud engages the longitudinal slot; and a brasing means installed in the left half handle between the lock

stud and the spring depression; and wherein the two half handles are assembled to the shank, by bolts passing through the holes in the ears on the half handles and the shank,

and a means for sheathing the combination tool for safety and carrying.

4,435,869

SHOE LASTING MACHINES

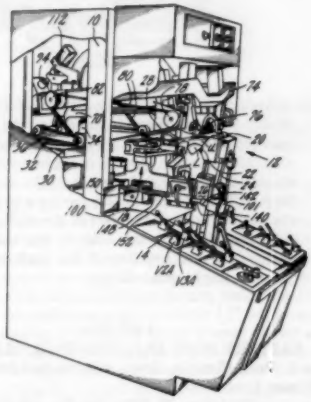
William H. Berrill, Leicester; Herbert W. Boot, Thurmaston, and Frank Hartshorn, Wigston, all of England, assignors to USM Corporation, Farmington, Conn.

Filed Mar. 2, 1981, Ser. No. 239,210

Claims priority, application United Kingdom, Mar. 22, 1980, 8009771

Int. Cl.³ A43D *21/00*

U.S. Cl. 12—12 **18 Claims**



1. A machine for lasting side portions of shoes comprising:

a shoe support arrangement by which a last carrying a shoe upper and an insole can be positioned and which includes means serving to position the shoe in a desired relationship with the longitudinal center line of the machine;

instrumentalities for operating on side portions of a shoe supported by the shoe support arrangement;

means for effecting relative movement between the shoe support arrangement and said instrumentalities in a direction extending lengthwise of a shoe supported by the shoe support arrangement, whereby the instrumentalities are caused to operate progressively along opposite side portions of such shoe, wherein the instrumentalities are mounted on a support which is movable between a first position, in which the instrumentalities can be positioned symmetrically at opposite sides of the longitudinal center line of the machine, and a second position, in which said instrumentalities can be positioned offset from said line;

a support moving means is provided for moving the support between its first and second positions, the arrangement being such that the support is positioned in a selected one of its first and second positions at the start of an operating cycle of the machine and is moved by the support-moving means to the other of said positions during said operating cycle;

said support being movable between its first position and a selected one of two second positions, in which said instrumentalities can be positioned offset from the longitudinal center line of the machine, said two second positions of the support being arranged symmetrically at opposite sides of the first position thereof, and the arrangement being such that the support is caused to be moved as aforesaid during an operating cycle of the machine between its first position and one of its second positions selected according to whether the shoe being operated upon is a left or a right;

said instrumentalities comprising side lasting instrumentalities;

said support-moving means for the support for the side lasting instrumentalities as they are moved between its first and second positions comprises cam means; and

wherein said cam means comprises a cam member having two cam faces and means for moving said member so as to enable one or other of said faces to be engaged by an abutment member, the arrangement being such that, in an operating cycle of the machine, relative movement is caused to take place over a predetermined distance between the cam member and the abutment member between a first operative position in which they are out of engagement with one another, in which position the support for the side lasting instrumentalities is in its first position, and a second operative position in which the abutment is located in engagement with one or other of the cam faces, and further that, with cam member and abutment member in such second operative position, when one of said cam faces is engaged by the abutment member said support is in one of its second positions, and when the other cam face is so engaged, said support is in the other of its second positions.

4,435,870

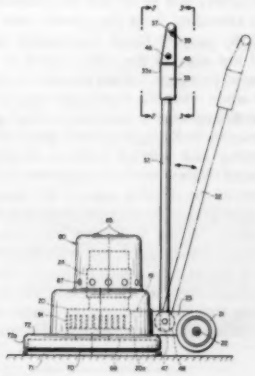
FLOOR MACHINE

Jeffery R. Tucker, 6831 Cabernet Ave., Newark, Calif. 94560; Dennis W. Ross, 1746 Carpentier St., San Leandro, Calif. 94577, and Hartwell F. Tucker, 1300 Holly Ave., Los Altos, Calif. 94022

Division of Ser. No. 129,902, Mar. 13, 1980, Pat. No. 4,330,897. This application Mar. 24, 1982, Ser. No. 361,427

Int. Cl.³ A47L *11/14*

U.S. Cl. 15—98 **6 Claims**



1. In a floor machine of the type having a power unit comprising a rotatable shaft driven through a transmission, a drive unit connected to the rotatable shaft for rotation thereby, a floor processing pad or the like connected to the drive unit, a drive guard enclosing at least a portion of the drive unit, a cover enclosing the transmission, a motor connected to the rotatable shaft through the transmission, means for connecting said motor to a source of electric power, said motor being a series universal motor arranged to develop 1.9 horsepower and torque sufficient to rotate said pad at a speed of from 800–900 rpm when the full weight of the power unit, said motor, and the handle rests on said pad and said motor is connected to a source of 120 volt power, the handle being an elongated member carrying a control box at its upper end and being mounted

on and extending upwardly from the transmission extension, said control box comprising spaced side walls, the improvement comprising a switch in the control box connected in the electrical circuit of the power unit, an elongate rigid lever with longitudinal edges, means mounting said lever for pivotal movement about one longitudinal edge thereof on one of said side walls of the control box, said lever having an abutment portion adapted to engage and actuate said switch, and spring positioned adjacent the lever and arranged to be flexed when said lever is gripped and moved away from said switch and to move said abutment portion into contact with said switch when said lever is released.

4,435,871
CLEANER FOR A TUBULAR WICK
Orville O. Johnson, 4011 S. Shady La., Eveleth, Minn. 55734
Filed Jan. 21, 1982, Ser. No. 341,510
Int. Cl.³ B08B *1/00*
U.S. Cl. 15—104 R **5 Claims**

1. A cleaner for loosening accumulated carbon on the top edge of a tubular wick, with the tubular wick having a diameter, comprising, in combination: a circular support having a circular periphery and an annular area adjacent to the periphery, means extending from the annular area adjacent the periphery of the support for at least partial insertion into the carbonized top edge of the tubular wick at a multiplicity of equally spaced locations around the tubular wick and for loosening the carbon when the support is rotated slightly, with the insertion and loosening means comprising: a multiplicity of pointed elements including a pointed shank portion, and means for connecting said pointed elements to said support in an equally spaced relation and in a single circular formation in the annular area of the circular support for engagement into the top edge of the tubular wick, with the annular area of the circular support having a diameter substantially equal to the diameter of the tubular wick, and with the annular area of the support defining an inner, central circular area of the circular support having a diameter slightly less than the diameter of the tubular wick, with the inner, central circular area of the circular support being free of any pointed elements or other protrusions.

4,435,872
SPHEROID PIG LAUNCHER
Vernon Leikam, P.O. Box 2069, Ponca City, Okla. 74602
Filed May 10, 1982, Ser. No. 376,732
Int. Cl.³ B08B *9/04*
U.S. Cl. 15—104.06 A **5 Claims**

1. In a launcher for launching spheroid pigs one at a time into a pipeline comprising:

a downward sloping barrel magazine for holding a multiplicity of spheroid pigs, the magazine having a closable fluid tight opening for loading the pigs on the breech end and a full bore opening valve on the muzzle end in fluid communication with a pipeline the magazine characterized by having a generally downwardly sloping lower surface such that the pigs will pass from the breech end to the muzzle end of the magazine in response to the force of gravity;

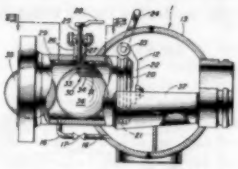
the improvement comprising:

apparatus situated in connection with the magazine upstream of the full bore valve for releasing the pigs one at a time into the pipeline from the magazine;

said apparatus having:

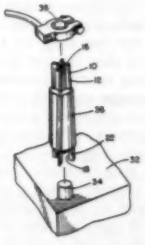
(a) a shaft means passing sealably through the wall of the magazine,

(b) on the exterior of the magazine, a means affixed to the shaft for turning the shaft, and



(c) affixed to the shaft on the interior of the magazine, a catcher-releaser affixed to the end of the shaft having a convexoid surface and a concavoid surface opposite the convexoid surface, the concavoid surface generally adapted to mate with a portion of the surface of one of the pigs, the catcher-releaser having a truncation generally parallel to the long axis of the shaft, and a truncation generally perpendicular to the long axis of the shaft, such that rotation of the shaft will catch and release a single spheroid pig.

4,435,873
BATTERY POST AND TERMINAL CLEANER
James L. Pool, Clarinda, Iowa, assignor to Lisle Corporation, Clarinda, Iowa
Filed Nov. 29, 1982, Ser. No. 444,969
Int. Cl.³ B23D *79/08*; A47L *13/08*
U.S. Cl. 15—105 **7 Claims**



6. An apparatus for cleaning posts and terminals comprising in combination:

(a) a plurality of blades, said blades having an outside scraping surface at one end and an inside scraping surface at the opposite end;

(b) a body member, said body member having a frustoconical inside cavity, said cavity having a converging array of slots extending uniformly toward a longitudinal axis of the cavity, each of said slots being adapted to slidingly receive one of said blades to adjust the spacing between said blades at said ends;

(c) a guide, said guide having a plurality of notches therein for receiving said blades and retaining said blades in a converging relationship in said body member slots; and

(d) a blade connecting member connected simultaneously to all of the blades and longitudinally slidable therewith to

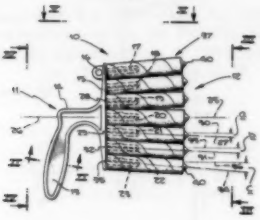
maintain sliding movement in unison of the blades relative to the body member.

4,435,874

BLIND CLEANING DEVICE

Jeff A. Jacobson, 22 Woodgrove, Irvine, Calif. 92714

Filed Aug. 1, 1983, Ser. No. 519,075
Int. Cl.³ A47L 4/02
U.S. Cl. 15—210 A 14 Claims



1. In a blind cleaning device having a handle and a plurality of vertically spaced rigid fingers with cleaning elements extending from a vertical support interconnected to the handle, the improvement which comprises:

said fingers includes a first finger fixedly mounted to said vertical support at generally the midpoint thereof, said first finger having its central longitudinal axis perpendicular to the central longitudinal axis of said vertical support, a pair of second and third fingers fixedly mounted to said vertical support on opposite sides of said first finger, each of said second and third fingers having their central longitudinal axes making an angle of about 1.5° with respect to a line extending from the midpoint of each of said second and third fingers at its respective point of connection to said vertical support along its respective central longitudinal axis outwardly normal to the central longitudinal axis of said vertical support whereby insertion of the fingers between slats of a blind is adapted to progressively clamp the slats between adjacent fingers until the slats abut against the vertical support.

4,435,875

PARALLEL ARM WINDSHIELD WIPER ASSEMBLY

Klaus Hauk, Altrip, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed May 5, 1982, Ser. No. 375,070
Claims priority, application European Pat. Off., May 13, 1981, 81302130
Int. Cl.³ B60S 1/18
U.S. Cl. 15—250.23 1 Claim

1. An improved parallel arm windshield wiper assembly comprising:

(a) a drive motor attached to a stationary support plate, said support plate having an aperture formed therein with a set of notches arranged about the periphery of said aperture;

(b) a drive spindle passing through both said aperture formed in said support plate and through an aperture formed in a windshield, said drive spindle connected at one end to said motor and having a wiper arm attached to a second end;

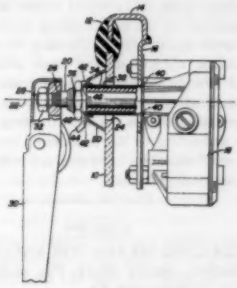
(c) a spacer tube coaxially aligned about said drive spindle and extending through said aperture formed in said windshield, said spacer tube having a pair of outwardly extending tabs formed on first and second ends thereof, said tabs on said first end engaging in said set of notches formed in said support plate;

(d) a sleeve coaxially arranged between said drive spindle and said spacer tube, said sleeve having an externally threaded end surface;

(e) a bracket having an opening formed therein approximate a first end and having a set of notches formed about the periphery of said opening, said bracket being positioned about both said drive spindle and said sleeve with said set of notches mating with said tabs formed on said second end of said spacer tube, said bracket further being retained at said first end by a nut fastened on said threaded end surface of said sleeve;

(f) a stud secured to a second end of said bracket;

(g) a control arm aligned parallel to said wiper arm and being pivotally attached at one end to said stud; and



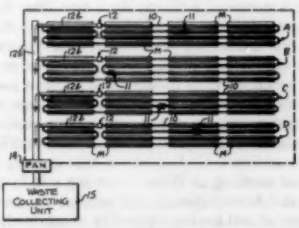
(h) a wiper blade support member pivotally connected to distal ends of both said wiper arm and said control arm, a line drawn between the centers of said drive spindle and said stud combines with said wiper arm, said control arm and said wiper blade support member to form a parallelogram which permits said wiper blade to maintain a constant orientation throughout its oscillatory sweep of said windshield.

4,435,876

FIBER WASTE DISPOSAL SYSTEM FOR TRAVELING PNEUMATIC CLEANERS

William L. Mulligan, Charlotte, N.C., assignor to Parks-Cramer Company, Fitchburg, Mass.

Filed Oct. 13, 1982, Ser. No. 434,115
Int. Cl.³ A47L 5/38
U.S. Cl. 15—312 R 5 Claims



1. In a fiber waste disposal system for a texile room containing a plurality of groups of fiber waste generating textile machines and having a plurality of traveling pneumatic cleaners each movable in a predetermined path of travel adjacent a respective group of textile machines for removing fiber waste from the textile machines, each traveling cleaner having at least one collection chamber thereon for collecting fiber waste therein, a plurality of unloading station means corresponding in number to the number of traveling pneumatic cleaners with an unloading station means being mounted adjacent the path of travel of each respective traveling cleaner for removing fiber waste from the collection chamber of the respective traveling

cleaner during a portion of its travel along said path, a fiber waste collection unit connected to said plurality of unloading station means for receiving fiber waste therefrom, suction producing means connected to said plurality of unloading station means and said collection unit for removing fiber waste from the collection chambers of respective traveling cleaners and for transporting such fiber waste from the unloading station means to said collection unit, control means operatively associated with said traveling cleaners and said unloading station means for controlling the operation of said traveling cleaners to provide a fiber waste collecting cycle and a fiber waste unloading cycle, said control means including cooperating means carried by each unloading station means and its associated traveling cleaner for effecting fiber waste unloading of each traveling cleaner during each unloading cycle, the improvement therein comprising said control means further including deactivating means operatively associated with each of said cooperating means for deactivating said cooperating means upon unloading of the associated traveling cleaner to ensure that said traveling cleaners are unloaded only once during each unloading cycle.

4,435,877

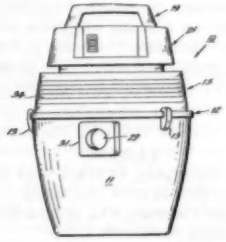
NOISE REDUCING MEANS FOR VACUUM CLEANER

Robert C. Berfield, Jersey Shore, Pa., assignor to Shop-Vac Corporation, Williamsport, Pa.

Filed Sep. 30, 1982, Ser. No. 429,446

Int. Cl.³ A47L *9/00*

U.S. Cl. 15—326 **8 Claims**



1. A vacuum cleaner including a bypass-type blower motor, a main blower fan connected to said motor and driven thereby to create a stream of working air, a dust filter located in said stream and upstream of said fan, said stream also extending through first and second plenums disposed downstream of said fan with said second plenum being downstream of said first plenum, partition means defining said plenums and including a first partition separating said plenums, said first partition having an opening through which said working air flows from said first plenum to said second plenum, sound muffler means including a section extending across said opening and through which said working air flows in leaving said first plenum and entering said second plenum, said section being constructed of foam material and having a plurality of relatively large perforations aligned with said opening.

4,435,878

POULTRY EVISCERATING TOOL

Rudolf J. Tieleman, Broekhuizerweg 6, 6983 BM Doesburg, Netherlands

Filed Jan. 24, 1983, Ser. No. 460,432

Int. Cl.³ A22C *21/06*

U.S. Cl. 17—11 **8 Claims**

1. A tool for eviscerating a poultry carcass by entering the body cavity of the carcass from a rear access opening, said tool comprising a shaft and a loop member mounted on said shaft, said loop being vertically elongated and being formed of two symmetrical interconnected halves which lie on opposite sides of a central plane,

each of said halves of the loop including an upper portion, an intermediate portion, a lower portion and a bottom, each said upper portion extending downwardly from the shaft in a direction which diverges from the central plane, each said intermediate portion extending downwardly from the

upper portion in a direction which converges toward the central plane, each said lower portion extending downwardly from the intermediate portion towards the central plane, and each said bottom extending from the lower portion to the central plane and having a center of curvature located in said central plane and a radius which is less than the distance from the central plane to the lower end of the upper portion.

4,435,879

MODELLING OR PACKING DEVICE FOR FOWL

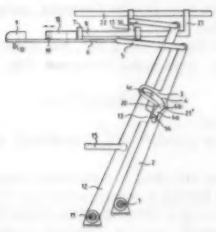
Kornelis van 't Slot, Uddel, Netherlands, assignor to Moba Holding Barneveld B.V., Barneveld, Netherlands

Filed Jun. 11, 1982, Ser. No. 388,658

Claims priority, application Netherlands, Jun. 17, 1981, 8102913

Int. Cl.³ A22C *21/00*

U.S. Cl. 17—11 **4 Claims**



1. Device for dressing a poultry, provided with a first pushing member (6) adapted to push the body of the poultry in a fixed direction and a second pushing member (18) adapted to push the ends of the legs of the poultry in nearly the same direction to lay the said legs against the said body, provided with a driving mechanism (15, 12, 16, 14, 4, 2, 5) for both pushing members which causes these members to carry out a forward and backward stroke, wherewith the second pushing member (18) moves faster than the first one (6) at the end of the forward stroke, in which each pushing member is coupled to a different one of two pivotable arms (2, 12) having different pivots (1, 11) wherewith a member (3) having a control slit (4) is connected to one (2) of the said arms and a control member

(14) fitting in said slit (4) is connected to the other of said arms, said slit having a first portion (4a) which is directed mainly radially with respect to the pivot of the arm connected to the member having the control slit and a second portion (4c) that is mainly tangentially directed with respect to said pivot, one (12) of the said arms being connected to a driving means (15) to be pivoted about its pivot (11).

4,435,880

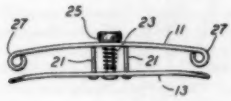
COLLAR CLASP

Irving Gardner, P.O. Box 294, Hunter, N.Y. 12442

Continuation-in-part of Ser. No. 312,378, Oct. 19, 1981, abandoned. This application Dec. 27, 1982, Ser. No. 453,275

Int. Cl.³ A41D *25/04, 25/10*

U.S. Cl. 24—49 KC **15 Claims**



1. A collar clasp comprising:

a backing bar including an elongated member, said backing bar having a central opening and two side openings therein, said central opening being centrally located along the major axis of said backing bar and the two side openings located substantially equally distant along said major axis on opposite sides of said central opening, both the central opening and the two side openings being grouped together;

a clasp bar including an elongated member, said clasp bar having a central opening and two side openings therein, said central opening being centrally located along the major axis of said clasp bar and the two side openings being located substantially equally distant along said major axis on opposite sides of said centrally located opening, both the central opening and the two side openings being grouped together;

a thread means including a knob aligned with and located through both the central opening in said backing bar and the central opening in said clasp bar, said thread means being adapted to draw said backing bar and said clasp bar together; and

a pair of guide rods aligned with and located through the two side openings in said backing bar and the two side openings in said clasp bar to keep the clasp bar and backing bar aligned in both the open and in the closed position.

4,435,881

HARNESS CLIP

Noboru Yamaguchi, and Seiichi Satoh, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 23, 1981, Ser. No. 324,108

Claims priority, application Japan, Nov. 28, 1980, 55-170639[U]

Int. Cl.³ B65D *63/10*

U.S. Cl. 24—16 PB **7 Claims**

1. A harness clip comprising:

(a) an engaging member having a hole therethrough and a stepped portion within said hole,

(b) a leg portion integrally connected to said engaging member and extending from one side of said engaging member, said leg portion having an engaging portion extending to one side of said leg portion,

(c) a flexible strap integrally connected to said engaging member and extending from the other side of said engaging member, said strap having a plurality of teeth on one side thereof and being flat on the other side thereof,

(d) said strap adapted to wrap around a harness for contacting said harness with said flat side of said strap and for subsequent passage through said hole of said engaging member, one of said plurality of teeth of said strap engaging said stepped portion of said engaging member for securing said harness to said engaging member,

(e) said leg portion and said strap adapted to be extended within a hole of a panel for securing said clip thereto, said engaging portion of said leg portion flexibly bent by said

panel and passing through said panel hole, said engaging member contacting one side of said panel upon insertion of said leg portion and said strap through said panel hole, and

(f) said teeth of said strap positioned apart from one another such that one of said plurality of teeth resiliently contacts the other side of said panel upon contact of said engaging member with said one side of said panel for biasing said clip in secure engagement with said panel.

4,435,882

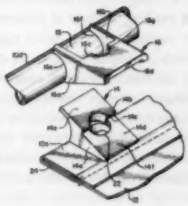
ASSEMBLY FOR HOLDING AND TENSIONING A WEBBING

Götz W. Unger, East Greenville, Pa., assignor to Knoll International, Inc., New York, N.Y.

Continuation of Ser. No. 311,637, Oct. 15, 1981, abandoned. This application Jun. 13, 1983, Ser. No. 503,075

Int. Cl.³ A44C *5/18;* **A44B** *21/00, 17/00*

U.S. Cl. 24—265 R **7 Claims**



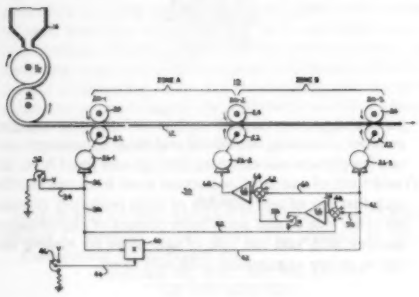
1. An assembly for holding and tensioning a webbing end to a framework comprising: a female member having opposed side walls; first and second abutment surfaces generally perpendicular to each other and disposed between said opposed side walls, said opposed side walls each having an edge portion; said female member being adapted to be fastened to a framework, in which said edge portions of the opposed side walls register with the framework; and a male member having opposed side walls and first and second abutment surfaces generally perpendicular to each other and disposed between the opposed side walls of said male member; said male member cooperating with said female member such that the first and second abutment surfaces of the male member are positioned respectively against the first and second abutment surfaces of the female member, and the opposed side walls of the male member are positioned between the opposed side walls of the female member; said male member including a portion thereof with a webbing attachment surface, opposed to and forming an acute angle with said second abutment surface of said male member.

4,435,883

STRETCH RATIO CONTROL CIRCUIT FOR MULTIPLE STATION WEB STRETCHING APPARATUS

Jerome D. Muszynski, Cudahy, Wis., assignor to Litton Industrial Products, Inc., Beverly Hills, Calif.

Filed Sep. 28, 1981, Ser. No. 306,463
Int. Cl.³ D06C 3/00; H02P 7/00
U.S. Cl. 26—71 8 Claims



1. A control circuit for apparatus stretching a web between pulling stations of the type having pull rolls in driving engagement with the web whereby the speed of the web in contact with the pull rolls is equal to the surface speed of the pull rolls and wherein each pulling station is powered by an electronically controllable variable speed drive responsive to provide pull roll speed which is proportional to an electronic signal, the apparatus having an intake station receiving the web to be stretched, a discharge station for discharging the stretched web, and at least one intermediate station, the overall stretching of the web extending between the intake and discharge stations with intermediate stretching occurring in intermediate zones between adjacent stations, said control circuit comprising:

first signal generating means (32) for providing a first signal to one of the intake and discharge stations corresponding to the desired speed of the web at the one station;

multiplier means (40) coupled to said first signal generating means for altering the first signal in accordance with the amount of overall stretching desired in the apparatus and for providing a second signal having an equivalent speed offset to the other of the intake and discharge stations corresponding to the speed of the web at the other station and having an equivalent difference in speed from the first signal to obtain the desired overall stretching; and

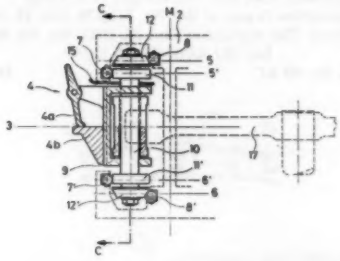
second signal generating means (50–68) coupled to said first signal generating means and to said multiplier means for deriving a signal indicative of the overall stretching and for reducing the discharge station signal by a selected amount of the signal indicative of the overall stretching to provide a third signal to the intermediate station distributing the overall stretching in the apparatus between the intermediate zones, wherein said third signal is obtained by subtracting a selected amount of the difference between said first and second signals from the discharge station signal.

4,435,884

CLIP-CHAIN TRACK FOR TENTER CLIPS

Alfred Bösch, Lustenau, Austria, assignor to Lindauer Dornier Gesellschaft mbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 280,017, Jun. 30, 1981, abandoned. This application Sep. 28, 1981, Ser. No. 306,416
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1980, 3024890
Int. Cl.³ D06C 3/04
U.S. Cl. 26—93 7 Claims



1. In a clip-chain track for tenter clips, with roller guidance in tenter frames for sheet material, composed of a clip-chain support with rod-like, endless and jointless guide rails of small cross-section mounted pairwise to the clip-chain support on both sides of the tensioning plane of the tenter chain, and with tenter clip rollers resting by their running surfaces against said guide rails,

the improvement comprising a pair of vertical spindle means connected to a clip body of each said tenter clip and mounting separate support rollers and running rollers on both sides of a tensioning plane of a sheet material in two separate transverse planes on each of said spindle means, with the support rollers absorbing vertical forces and having slanted running surfaces of opposite inclinations, and

separate support rails mounted on one side of their associated support rollers and running rails mounted on the other side of their associated running rollers in the said transverse planes at the clip-chain support.

4,435,885

PROCESS AND APPARATUS FOR MANUFACTURING STORAGE BATTERY PLATES

Yuichi Suzuki, and Ichiro Sano, both of Yokohama, Japan, assignors to Furukawa Denchi Kabushiki Kaisha and Furukawa Denki Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 239,883, Mar. 2, 1981, abandoned. This application Aug. 19, 1983, Ser. No. 524,471
Claims priority, application Japan, Feb. 28, 1980, 55-23436
Int. Cl.³ B23P 19/00, 25/00; B26D 7/00, 7/06
U.S. Cl. 29—2 8 Claims

1. Apparatus for use in the manufacture of plates of an electrical storage battery in a continuous operation, comprising:

a punch press for punching grids of openings in a continuous strip of stock material and for partially severing plates from said stock strip material around the periphery of said plates to define the perimeter of said plates while leaving relatively weak and easily rupturable bridges interconnecting said plates with surrounding stock strip material,

said press including means for form finishing said plates simultaneously with the partial severing and cutting die means for the partial severing;

a filling mechanism operative to fill corrosive paste material into the openings of said grids;

an ejector mechanism for removing said plates from said surrounding stock strip material by rupturing said bridges; and

a drive mechanism for feeding said stock material from a source thereof sequentially through said punch press, said filling mechanism, and said ejector mechanism.

5. In a process for the manufacture of plates of an electrical storage battery which includes the steps of punching a grid of openings in stock strip material, filling said openings with a corrosive paste material, and subsequently punching said battery plates out of said stock strip material, the improvement comprising:

partially severing said stock strip material at positions defining the perimeter of said plates along frame-shaped cut lines each comprising a plurality of longitudinally spaced cut lines which define said perimeter while simultaneously form finishing said plates, the adjacent ends of the respective cut lines being spaced from each other by a distance defining relatively weak and easily rupturable bridges interconnecting said plate with said stock strip material, said bridges supporting said plate within said stock strip material to form a plurality of plate blanks each defined by a frame-shape cut line and connected through the bridges to the stock strip material surrounding the perimeter of each plate blank;

subsequently filling said openings with said corrosive paste material, each plate blank being supported through the bridges by the surrounding stock strip material; and

subsequently ejecting said plates from the surrounding stock strip material by rupturing said bridges.

4,435,886

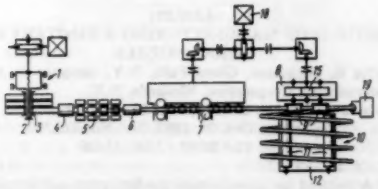
PIPE-WELDING MILL FOR PRODUCTION OF COILED PIPES

Jury F. Shevakin; Igor I. Dobkin, both of Moscow; Efim M. Donskoi, Zheleznodorozhny; Grigory L. Manov, Moscow; Vasily V. Zhdanov, Moscow; Elena S. Berger, Moscow; Valery M. Popov, Sverdlovskoi; Alexei A. Pavlov, Sverdlovskoi, and Rashid Z. Akchurin, Sverdlovskoi, all of U.S.S.R., assignors to Gosudarstvenny Nauchnoissledovatelsky, Proektny I Konstruktorsky Institut Splavov I Obrabotki Tsvetnykh Metallov "Giprotsvetmetobrabotka", U.S.S.R.

Filed Oct. 29, 1981, Ser. No. 316,123

Int. Cl.³ B21C *37/00, 47/00*

U.S. Cl. 29—33 D **2 Claims**



1. In a pipe-welding mill for the production of coiled pipes from coiled strips including a coil preparation section; an arrangement for unwinding coils prepared in said section; means for displacing said arrangement in a direction perpendicular to the direction of movement of the pipe in said mill; a magazine including a reel containing said coils, said magazine being mounted on said unwinding arrangement; a strip coupler installed behind said coil preparation section in the direction of movement of the pipe; a shaping stand installed behind said strip coupler; a welding stand installed behind said shaping stand; a drawing stand installed behind said welding stand; a coiling arrangement installed behind said drawing stand in the direction of movement of the pipe, said coiling arrangement including bending rollers a receiving arrangement including receiving rollers; common drive means for driving both said bending and receiving rollers; and a cutting arrangement, the improvement comprising:

said receiving arrangement includes a platform mounted for tilting movement with respect to the axes of said bending rollers; means for tilting said platform; said receiving rollers of said receiving arrangement being mounted for rotation on said tiltable platform; universal joint means for coupling said receiving rollers to said common drive means of the bending rollers so that said receiving rollers tilt together with said platform; and wherein said cutting arrangement is installed behind said bending rollers in the path of a turn of the pipe being received in said receiving arrangement.

4,435,887

METHOD OF MAKING PROJECTILE

Kaare R. Strandli, and Arne M. Östlie, both of Raufoss, Norway, assignors to A/S Raufoss Ammunisjonsfabrikker, Raufoss, Norway

Division of Ser. No. 248,539, Mar. 27, 1981. This application Dec. 22, 1982, Ser. No. 452,087

Int. Cl.³ B21K *21/06*

U.S. Cl. 29—123 **2 Claims**

1. In the manufacture of a multi-capability projectile of the type having a heavy armour piercing primary penetration element surrounded over its full length by a secondary armour piercing penetration element which extends forward of the primary penetration element to form a cavity having a bursting charge therein, the secondary penetration element being constructed to splinter and fragment upon ignition of the bursting charge, and a nose portion ahead of the secondary penetration element and having an impact ignition charge therein, the improvement comprising attaching the primary penetration element to the secondary penetration element by the following steps:

taking the secondary penetration element, which has a large internal diameter front portion, a smaller internal diameter rearward portion and a radially extending, axially facing shoulder between the front and rear portions, and arranging said secondary penetration element in a position to receive the back end of the primary penetration element in the smaller internal diameter rearward portion,

inserting the back of the primary penetration element, which back is cylindrically shaped, into the said smaller internal diameter rearward portion of the secondary penetration element, and

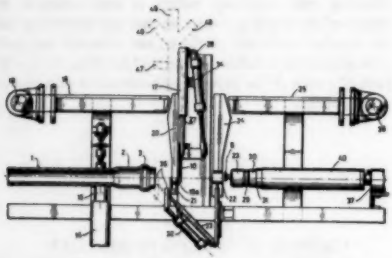
forcing an annular tool down into the said shoulder to form an annular groove defining a rim radially inwardly thereof and forcing that rim into rimmed contact with the primary penetration element on the cylindrically shaped side thereof to positively secure the primary penetration element in said smaller internal diameter portion.

4,435,888

APPARATUS FOR INSTALLING A SEALING RING

Wilhelmus F. T. C. Olderaan, Hardenberg, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Division of Ser. No. 134,341, Mar. 26, 1980, Pat. No. 4,304,037.
This application Nov. 6, 1981, Ser. No. 318,822
Claims priority, application Netherlands, Mar. 29, 1979, 7902473
Int. Cl.³ B23P 19/02
U.S. Cl. 29—235 4 Claims



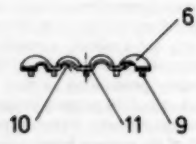
1. Apparatus for installing a sealing ring in an annular groove chamber of a socket end of a pipe part, comprising a sealing ring retaining member, a sealing ring impression member and retaining means so as to keep a sealing ring in its impressed position, as well as means for moving the retaining means from an inactive position into an active position and reverse, in which the retaining means comprises two elements being movable with respect to one another, and the impression member being movable in between said elements, said retaining means comprising a first mandrel portion being connected with a mandrel, said first mandrel portion adjoining said mandrel through an abutment edge, and a second mandrel portion, which expandable parts form a tapering surface when expanded, whereby the periphery of the tapering plane formed by said parts at least equals the periphery of a supporting ring.

4,435,889

METHOD AND APPARATUS FOR THE PRODUCTION OF A ROLLING BEARING CAGE

Peter Horling, Mainberg; Hermann Hetterich, Heidenfeld; Herbert Dobhan, Bergrheinfeld, and Norbert Klupfel, Hambach, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 29, 1981, Ser. No. 287,898
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1980, 3030247
Int. Cl.³ B21D 53/12
U.S. Cl. 29—148.4 C 3 Claims



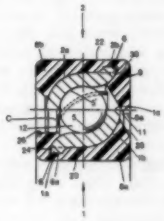
1. A process for the production of a cage part for the cage of a rolling bearing, wherein the cage part is generally annular with alternate recesses for receiving rolling element and flat sections adapted to engage other cage parts, whereby the cage parts may be held together by riveting; and said method comprising forming a ring of a material of round or rectangular cross-section, and thereafter pressing said ring in a press having a hollow die with a rectangular cross-section and recesses distributed about the bottom of the hollow thereon, whereby the cage part is formed to its final shape and the material of the ring flows into said recess to form rivet pins simultaneously with the forming of the cage part, said pressing step forming the cage part with a substantially rectangular cross-section.

4,435,890

METHOD FOR PRODUCTION OF PLASTIC EXTRUSION-COATED BEARING RACES FOR ROLLING BEARINGS AND BEARING RACES PRODUCED THEREBY

Horst M. Ernst, Eltingshausen; Manfred Brandenstein, Eussenheim; Lothar Walter, and Armin Olschewski, both of Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Apr. 26, 1982, Ser. No. 372,197
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1981, 3117162
Int. Cl.³ B21D 53/10; B23P 17/00
U.S. Cl. 29—148.4 R 3 Claims



1. A method for making complementary pairs of race rings for rolling bearing assemblies from a unitary metallic base component formed with the raceways for the rings consisting of the steps of:

a. forming at least one annular separation seam in the metallic base component defining a bridge which can be severed to form the paired bearing race rings;

b. hardening the metallic base component;

c. machining the raceways of the rings simultaneously or successively;

d. plastic coating the base component to form housing sections adjacent the bearing and side surfaces of the race rings exposing the raceways and separation seam; and

e. separating the base component at the bridge to form the finished race rings.

4,435,891

METHOD OF MANUFACTURING A SANITARY FAN SPRAY NOZZLE

Charles B. Nicholson, Glens Falls, N.Y., assignor to Albany International Corporation, Menands, N.Y.

Division of Ser. No. 235,895, Feb. 19, 1981, abandoned. This application Oct. 20, 1982, Ser. No. 435,360
Int. Cl.³ B23P 15/00, 13/00
U.S. Cl. 29—157 C 2 Claims

1. A method for manufacturing a fan spray nozzle comprising the steps of:

providing a substantially cylindrical tube having interior and exterior surfaces;

drilling a first pair of coaxial, diametrically opposed holes of relatively small diameter through the walls of said tube;

enlarging the diameter of one of said diametrically opposed holes by drilling coaxially therethrough with a drill bit having a larger diameter than the diameter of said diametrically opposed holes;

enlarging the diameter of a portion of the other of said diametrically opposed holes by passing said drill bit through said one hole and the interior of said tube until it

contacts the interior surface defining an interior opening of said other hole, drilling along the axis of said other hole, and stopping said drilling before said bit fully penetrates the exterior surface of said tube such that said other hole includes a first cylindrical hole portion extending within the walls of said tube from the interior surface thereof to a point between said interior surface and said exterior surface and a second hole portion of lesser diameter than said first hole portion extending from said point to said exterior surface;

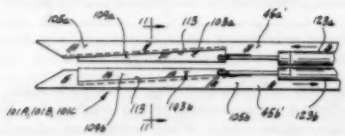
grinding an arcuate groove within the walls of said tube, said groove extending below the exterior surface of said tube and intersecting said other hole at a depth which is between the exterior surface of said tube and said point, said groove being ground to have a length dimension substantially parallel to the longitudinal axis of said tube; and

plugging said one of said diametrically opposed holes after the enlarging thereof, whereby water provided under pressure to the cylindrical tube is dispersed in a predetermined pattern.

4,435,892

METHOD OF DISASSEMBLING WOODEN PALLETS

Lonnie M. Williams, Greene County, Ill., assignor to Williams Panel Board Company, Roodhouse, Ill.

Division of Ser. No. 91,517, Nov. 5, 1979, Pat. No. 4,320,570.
This application Mar. 8, 1982, Ser. No. 356,246
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—239 **4 Claims**

1. Method of disassembling a nailed together wood structure, such as a wood pallet or the like, having a plurality of longitudinal stringers and a plurality of slats extending transversely of the stringers and nailed to at least one face of the stringers, said method comprising the steps of:

moving a wood structure from a loading position to a cutting position, said wood structure being moved in the longitudinal direction of its above-said stringers;

positioning a pair of shear blades on opposite sides of one stringer at a respective interface of said one stringer and the slats nailed thereto, said shear blades being movable toward and away from one another between a retracted position in which said shear blades are clear of said wood structure and a cutting position in which the shear blades cooperate with one another so as to shear said nails; and

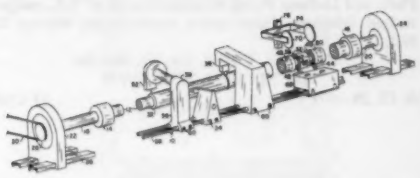
actuating said shear blades for movement from their retracted to their cutting positions so as to shear the nails holding said slats to said one stringer at said one interface thereby freeing the slats from said one stringer.

4,435,893

METHOD OF MANUFACTURE OF HYDRAULIC CYLINDERS UTILIZING BRONZE OVERLAYS FOR ENGAGING SURFACES

James O. Sims, Rte. #2 Box 246, Hartselle, Ala. 35640

Filed Oct. 13, 1981, Ser. No. 310,630
Int. Cl.³ B23P *17/00, 15/00*
U.S. Cl. 29—412 **9 Claims**



1. The process of manufacturing components of a fluid-operated cylinder, which cylinder comprises a pair of circular members, an outer, hollow, bearing member and an inner piston member, including the following steps:

rotating an elongated steel member about its longitudinal axis;

fusing onto the rotating steel member a continuous layer of bronze, said bronze being applied by deposition from a bronze wire;

monitoring the thickness of said bronze layer and controlling the depth of said layer, including the deposition to a minimum thickness of 0.031 inch;

machining the surface of said bronze layer to a selected diameter and finish;

cutting a series of spaced grooves through said bronze layers into the steel of said steel member, said grooves being cut to selected depths and widths; and

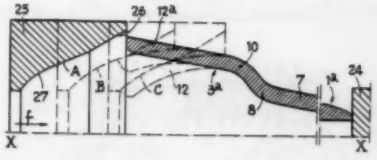
severing a discrete length from said steel member, whereby said length includes at least a series of said spaced grooves, and whereby a discrete one of said circular members of a said cylinder is fabricated.

4,435,894

DUCTILE CAST IRON PIPE HAVING CONSTRICTED END CASING

Claude Fuminier, and Michel Pierrel, both of Pont-a-Mousson, France, assignors to Pont-A-Mousson S.A., Nancy, France

Division of Ser. No. 146,736, May 2, 1980, Pat. No. 4,330,015.
This application Feb. 12, 1982, Ser. No. 348,580
Claims priority, application France, May 17, 1979, 79 12559
Int. Cl.³ B22D *11/126*
U.S. Cl. 29—527.5 **3 Claims**



1. A method of making a pipe or similar tubular member of ductile cast iron having an end casing, comprising the steps of: making by centrifugal casting a pipe with a casing preform using an end casing shell and a corresponding casing mandrel, the shell and mandrel forming between them an annular space

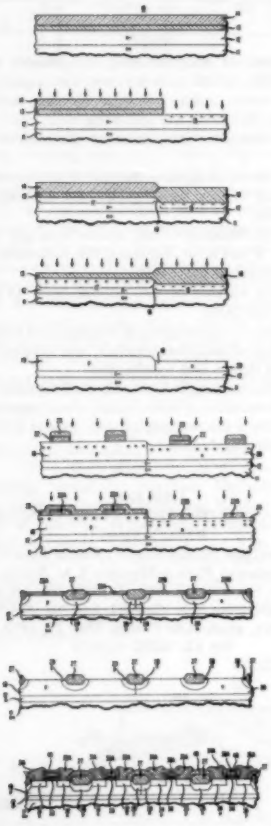
having, starting from the entrance of the casing, a first converging rectilinear profile followed by a second convex curved profile; and, subsequently, after removing the centrifuged from the mold, progressively deforming the rectilinear profile so as to curve it towards the axis of the pipe by exerting a force on the end of the preform which has an axial component and a radial component directed towards the axis of the pipe.

4,435,895

PROCESS FOR FORMING COMPLEMENTARY INTEGRATED CIRCUIT DEVICES

Louis C. Parrillo, Warren; George W. Reutlinger, Florham Park, and Li-Kong Wang, Martinsville, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 5, 1982, Ser. No. 365,396
Int. Cl.³ H01L *21/22, 29/78*
U.S. Cl. 29—571 **13 Claims**



1. In the manufacture of complementary integrated circuits in a silicon wafer, the process for forming complementary chanstops at the surface of the water between regions where transistors are to be formed comprising the steps of,

providing a silicon wafer whose surface includes p-type and n-type regions in which transistors are to be formed,

implanting acceptor ions selectively in the surface regions of the wafer where chanstops are to be formed in both the p-type and n-type regions,

implanting donor ions selectively only into the n-type regions where the n-type chanstops are to be formed, the acceptor ions being chosen to have a greater tendency to segregate in a growing oxide than the donor ions and the dosages being substantially similar, and

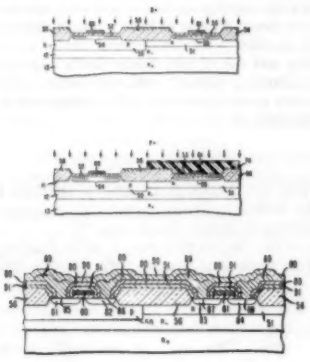
heating the wafer in an oxidizing atmosphere while the portions of the wafer in which chanstops are to be formed are selectively exposed for oxidizing the surface regions where chanstops are to be formed, whereby as a result of the difference in segregation characteristics, underlying the oxide there are formed in the p-type surface regions localized p-type chanstops where acceptor ions are in excess and in the n-type surface regions localized n-type chanstops where the donor ions are in excess.

4,435,896

METHOD FOR FABRICATING COMPLEMENTARY FIELD EFFECT TRANSISTOR DEVICES

Louis C. Parrillo, Warren, N.J., and Richard S. Payne, Andover, Mass., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 328,150, Dec. 7, 1981, abandoned. This application Jun. 29, 1983, Ser. No. 508,923
Int. Cl.³ H01L *21/265*
U.S. Cl. 29—571 **14 Claims**



8. A method for manufacturing a complementary MOS device which is characterized by the method for forming source/drain regions in each of two contiguous tub regions of opposite conductivity type of a silicon body comprising the steps of:

forming a thin oxide layer over the areas of each of the two tub regions where transistors are to be formed and a relatively thicker layer silicon oxide layer over the p-n junction region between the two regions;

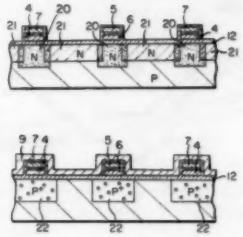
depositing a polysilicon layer over the body and patterning it to form gate conductors over the central portion of the two transistor areas; and

subjecting the body to donor and acceptor ion implantations, the acceptor implantation being unmasked to permit penetration in both the n-type and p-type tub regions, and the donor implantation being masked to permit penetration into only the p-type tub region whereby p-type source/drain regions are formed in the n-type tub regions and n-type source/drain regions are formed in the p-type tub regions, each aligned with the gate conductors.

4,435,897
METHOD FOR FABRICATING SOLID-STATE IMAGE SENSOR

Takao Kuroda, Osaka, and Kenju Horii, Shiga, both of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Nov. 12, 1981, Ser. No. 320,845
Claims priority, application Japan, Nov. 19, 1980, 55-163654
Int. Cl.³ H01L *31/10*
U.S. Cl. 29—572 1 Claim



1. A method for the fabrication of a solid-state image sensor of the charge-coupled type having a plurality of photoelectric transducer means on a semiconductor substrate of one conductivity type, a corresponding plurality of excessive charge drain regions coupled to respective ones of said transducer means, and a plurality of first electrodes and second electrodes which function as gate electrodes overlying corresponding channels coupled between said transducer means and said excessive charge drain regions for controlling the discharge of excessive charge from each of said transducer means to the corresponding excessive charge drain region, said method comprising the steps of:

forming channel stopper regions by introducing impurities of the same conductivity type as the substrate into each zone where a channel is situated and into each zone where a corresponding excessive charge drain region is situated, said impurities being introduced from the zones where each first electrode and each second electrode are situated, and introducing impurities with conductivity type opposite to that of the substrate into the excessive charge drain region of the zone where each first electrode is formed;

forming said first electrodes and said second electrodes on a surface of said substrate overlying corresponding channels; and

introducing conductivity-type-determining impurities into the surface of said substrate upon which said first and second electrodes are formed, using said electrodes as a diffusion mask, to form said excessive charge drain regions and said photoelectric transducer means in said substrate.

4,435,898
METHOD FOR MAKING A BASE ETCHED TRANSISTOR INTEGRATED CIRCUIT

Santosh P. Gaur; John S. Lechaton, both of Wappingers Falls, and Gurumakonda R. Srinivasan, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 22, 1982, Ser. No. 360,731
Int. Cl.³ H01L *21/302, 21/22*
U.S. Cl. 29—577 C 12 Claims

1. A method of making a high performance bipolar transistor in an integrated circuit comprising:

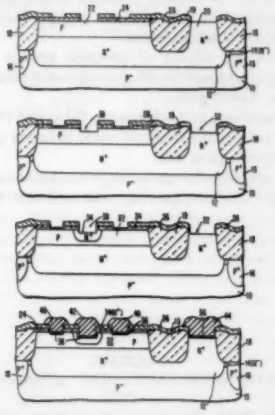
providing a monocrystalline silicon substrate having a pattern of regions of said silicon isolated from one another by a dielectric isolation pattern on one major surface of said substrate;

providing a subcollector region within said silicon and spaced from said major surface;

forming a base region in at least certain of said regions of silicon down to said subcollector region wherein said base region has a surface concentration of more than about 1×10^{18} atoms/cc;

forming a surface mask opening down to the surface of the said silicon over the area in which a depression is planned to be formed;

reactive ion etching to form said depression having a depth



between about 70 to 100 nanometers in the portion of said base region wherein an emitter region is planned to be formed;

the sides of said depression are substantially vertical without undercutting and the bottom of said depression is substantially planar from one vertical side to another vertical side;

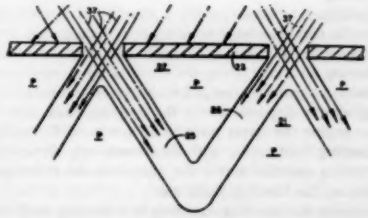
forming an emitter region in said etched portion of said base region and heating said emitter region wherein a narrow intrinsic base region is formed; and

making contacts to each of the elements of the said bipolar transistor.

4,435,899
METHOD OF PRODUCING LATERAL TRANSISTOR SEPARATED FROM SUBSTRATE BY INTERSECTING SLOTS FILLED WITH SUBSTRATE OXIDE

Sidney I. Soclof, San Gabriel, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 239,750, Mar. 2, 1981. This application Dec. 16, 1982, Ser. No. 450,310
Int. Cl.³ H01L *21/265, 21/302*
U.S. Cl. 29—577 R 11 Claims



1. A method for producing an array of sub-micron dimen-

sioned NPN type lateral transistors formed in a silicon substrate doped P-type, comprising the steps of:

forming a plurality of first sidewalls of pairs of intersecting slots in spaced apart relation across the substrate defining semi-arrays of V shaped intermediate regions which will become transistors;

oxidizing the substrate and intermediate regions to fill said slots and cover the surface of the substrate through which they were made;

forming a plurality of second sidewalls of orthogonal slots relative to said pairs of slots dividing the semi-arrays of regions into individual transistor active regions;

N+ doping each of said active regions through the inner opposed second sidewalls;

driving in said doping to comprise emitter and collector regions on respective sides of original P substrate comprising the base regions;

further oxidizing said substrate to fill in said orthogonal slots and insure total peripheral oxide isolation of each transistor active region; and

forming metallization patterns in electrical connection with the respective emitter, base and collector regions.

4,435,900

METHOD OF MANUFACTURING A MAGNETIC HEAD UNIT

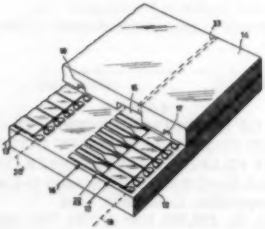
Johannes de Wilde, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 200,820, Oct. 27, 1980. This application Jun. 25, 1982, Ser. No. 392,116

Claims priority, application Netherlands, Nov. 28, 1979, 7908611

Int. Cl.³ G11B *5/42*

U.S. Cl. 29—603 **4 Claims**



1. A method of manufacturing a magnetic head unit having a plurality of transducing elements arranged in a housing, comprising:

providing a substrate having a plurality of transducing elements and associated bonding pads arranged in a row;

covering the transducing elements with a silicon cover plate having a surface facing the transducing elements and also having a groove arranged through the surface so that the groove is disposed above the bonding pads, and further arranging the cover plate to be in a good thermally-conducting relationship with the transducing elements;

removing material above the groove in the cover plate to expose the bonding pads; and

arranging the resulting assembly in a housing such that the cover plate is in a good thermally-conducting relationship with the housing.

4,435,901

METHOD OF MANUFACTURING SCISSORS AND SCISSORS

Masatoshi Nishikawa, No. 56, Aza-Chira, Sanjoh, Bisai City, Aichi Prefecture, Japan

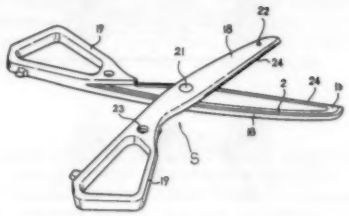
Continuation of Ser. No. 29,700, Apr. 3, 1979, Pat. No. 4,250,620. This application Jan. 8, 1981, Ser. No. 223,325

Claims priority, application Japan, Nov. 2, 1978, 53-135352

The portion of the term of this patent subsequent to Feb. 17, 1998, has been disclaimed.

Int. Cl.³ B26B *13/02*; B21K *11/06*

U.S. Cl. 30—254 **2 Claims**



1. Safety scissors that include two elongated scissor members that are pivotally joined together at a point intermediate their ends by a pivot pin so as to divide each scissor member into a gripping section and a cutting section, the improvement being that the cutting section of each scissor member is composed of a generally dish-shaped metallic member partially embedded in a plastic matrix, said generally dish-shaped metallic member consisting of an elongated and generally flat piece of metal that includes a large recessed central portion that extends on both sides of said pivot pin for substantially the full length of said cutting section and which is surrounded by a narrow outwardly extending generally oblong rim portion, one portion of said narrow rim portion serving as the sharp cutting edge for each scissor member, said large recessed central portion having a plurality of holes therein, said holes being located on both sides of said pivot pin, plastics material both filling said large recessed central portion to a level slightly below the level of said narrow rim portion and extending through said plurality of holes to the area behind said large recessed portion so as to form a sturdy support for the entire metallic member, whereby when said scissor members are moved back and forth relative to each other the only portions which come into direct sliding contact are the generally oblong narrow rim portions.

4,435,902

ARTICULATED BOOM WATER JET CUTTING APPARATUS

John E. Mercer; John H. Olsen, and Stephen Elkins, all of King County, Wash., assignors to Flow Industries, Inc., Kent, Wash.

Filed Dec. 16, 1980, Ser. No. 216,910

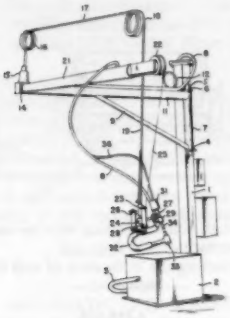
Int. Cl.³ B26F *3/00*

U.S. Cl. 30—296 R **11 Claims**

1. A fluid jet cutting apparatus comprising:

a cutting head including a nozzle for forming a cutting jet for cutting a workpiece with a jet of high velocity fluid and a jet catching means for catching any cutting jet formed by said nozzle and support means for connecting said cutting jet to said jet cutting means; and,

translation means for supporting said cutting head while allowing movement in two directions; and,



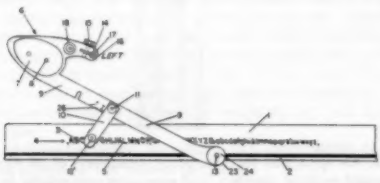
rotational translation means connecting said translation means to said cutting head for allowing rotation in three perpendicular axes.

4,435,903

LEFT-HANDED LETTERER

Philip E. Warner, 56 Hilton Rd., Mount Holly, N.J. 08060

Filed Aug. 24, 1981, Ser. No. 295,707
Int. Cl.³ B43I *13/10*
U.S. Cl. 33—23 D **5 Claims**



1. A lettering device for drawing characters for use in connection with a lettering template having character grooves and a horizontal guide pin groove, comprising:

a body;

a guide pin;

a tracer pin; and

writing instrument holding means for holding a writing instrument; said guide pin, said tracer pin and said writing instrument holding means being located at three spaced positions on said body at vertices of a right triangle, said tracer pin being located at the right angle vertex; and

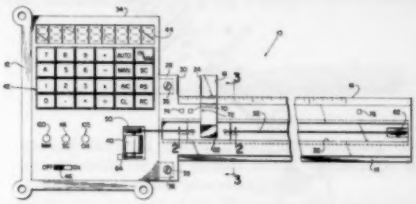
knob means on said body for providing an element to be held with the hand of the user for manipulation of the lettering device on the lettering template, said knob means being located outside of said right triangle adjacent and closest to that leg of the right triangle which interconnects said writing instrument holding means and said tracer pin; whereby the lettering device can be easily manipulated by the left hand of the user.

4,435,904

AUTOMATED MEASURING SCALE

David J. Logan, Glastonbury; Ronald B. Webster, Ellington, and Daniel J. Sullivan, Hartford, all of Conn., assignors to Gerber Scientific Products, Inc., Manchester, Conn.

Filed Feb. 8, 1982, Ser. No. 346,998
Int. Cl.³ G01B *3/20, 5/02*
U.S. Cl. 33—143 K **15 Claims**



1. An automated measuring scale for making measurements of linear extent in a selected measuring direction comprising:

a base having a linear guide for aligning the scale in a measuring position aligned with a selected measuring direction, and including means defining a reference position;

an index marker slidably mounted on the base and movable relative thereto toward and away from said reference position to identify linear measurements of various extent along the base in the measuring direction, said index marker including a marking guide for enabling a mark to be made on a sheet placed beneath said base;

motor means also mounted on the base and connected in driving relationship with the movable index marker for moving the marker back and forth relative to the base in the measuring direction; and

control means connected with the motor means and including a command entry means having a keyboard mounted on the base for manually entering measurement commands, and processing means responsive to the measurement commands entered through the keyboard for causing the motor means to move the index marker relative to the base by commanded amounts whereby measurements of specified linear extent may be produced by movement of the index marker.

4,435,905

TELESCOPING MAGNETIC BALL BAR TEST GAGE

James B. Bryan, Pleasanton, Calif., assignor to The United States of America as represented by The United States Department of Energy, Washington, D.C.

Filed Mar. 15, 1982, Ser. No. 358,084
Int. Cl.³ G01B *7/31*
U.S. Cl. 33—181 R **10 Claims**

1. A test gage for determining the accuracy of an associated machine having a servo drive, which comprises:

a first gage ball;

a second gage ball;

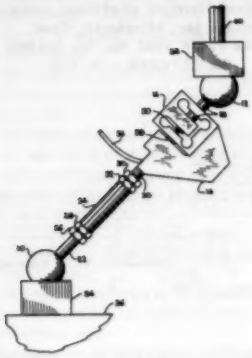
telescoping holding means for maintaining said first gage ball and said second gage ball in a relationship allowing relative radial motional freedom while not allowing relative lateral motional freedom;

a first means for securing said first gage ball so that the center of said first gage ball is maintained at a fixed location with respect to an associated machine;

a second means for securing said second gage ball so that the center of said second gage ball is directed by an associated machine to execute a prescribed trajectory, all points of which are equidistant from the center of said first gage ball; and

means for determining changes in the radial distance be-

tween the center of said first gage ball and the center of said second gage ball, whereby error in the execution of



the directed trajectory is detected and the accuracy of an associated machine is determined.

4,435,906

PERFORATING JIG

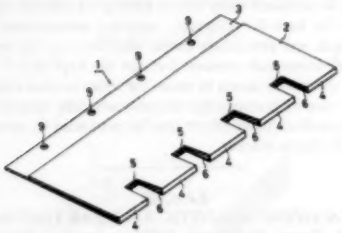
Chuzo Mori, Tokyo, Japan, assignor to Carl Manufacturing Co., Ltd., Tokyo, Japan

Filed Jan. 27, 1982, Ser. No. 343,168

Claims priority, application Japan, Jun. 26, 1981, 56-95020[U]

Int. Cl.³ B26D *5/00*; B27B *5/00*

U.S. Cl. 33—185 R **5 Claims**



1. A perforating jig comprising two superimposed plates, one edge thereof being openably and closably joined, for sandwiching a sheet therebetween, said plates having in and along the joined edge at least one recess in each plate so formed as to allow insertion and positioning therein of a perforating end of a punch to fully perforate an edge portion of the sheet.

4,435,907

MACHINE BODY INCLINATION DETECTOR DEVICE

Shigeaki Okuyama, Kawachinagano; Norimi Nakamura, and Osami Hashimoto, both of Sakai, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Jan. 11, 1982, Ser. No. 338,511

Claims priority, application Japan, Jan. 13, 1981, 56-3647[U]

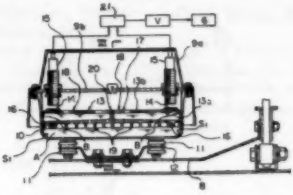
Int. Cl.³ G01C *9/06*, *9/18*

U.S. Cl. 33—366 **9 Claims**

1. A machine body inclination detector device comprising:

a container adapted to be fixed to said machine body for containing a liquid;

a float in said container for floating substantially sunken in said liquid and having horizontal longitudinally extending spaces therein communicating with the liquid in said con-



tainer through holes extending between said spaces and at least one surface of said float and

means for detecting the inclination of said float.

4,435,908

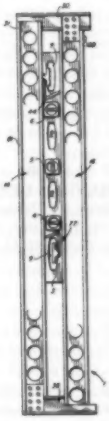
OFFSET, EXTENDABLE, QUICK-RELEASE PLUMBNESS INDICATING APPARATUS

Paul M. Semler, Jr., 3045 N. Dodge Blvd., Tucson, Ariz. 85716

Filed Dec. 20, 1982, Ser. No. 451,726

Int. Cl.³ G01C *9/00*

U.S. Cl. 33—376 **13 Claims**



1. An apparatus for measuring plumbness of an elongated, warped vertical member, said apparatus comprising in combination:

(a) an elongated main body member having parallel opposed flat first and second surfaces;

(b) a bubble vial attached to said main body member for indicating when said first and second surfaces are precisely vertical;

(c) an elongated first extension member having an elongated flat third surface slidably engaging said first surface and an elongated fourth surface opposed to said third surface;

(d) an elongated second extension member having an elongated flat fifth surface slidably engaging said second surface and an elongated sixth surface opposed to said fifth surface;

(e) first offset means attached to the upper end of said first extension member and extending beyond said sixth surface to an imaginary plane that is parallel to said first surface;

(f) second offset means attachable to the lower end of said second extension member and extending beyond said sixth surface to said imaginary plane;

(g) first quick release means connected to said main body member and actuatable for releasably engaging said first extension member to allow sliding of said third surface

along said first surface and thereby allow extension of said first extension member to effectively lengthen said apparatus if said first quick release means is actuated and to lock said first extension member relative to said main body member if said first quick release means is not actuated; and

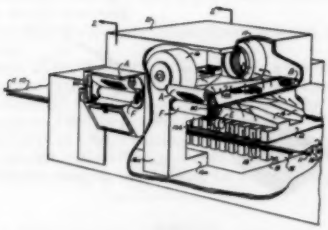
(h) second quick release means connected to said main body member and actuatable for releasably engaging said second extension member to allow sliding of said fifth surface along said second surface and thereby allow extension of said second extension member to affectively lengthen said apparatus if said second quick release means is actuated and to lock said second extension member to said main body member if said second quick release means is not actuated.

4,435,909

AUTOMATIC LINT SCREEN

John G. Williamson, Jr., Greenville, S.C., assignor to Marshall and Williams Company, Providence, R.I.

Filed Nov. 30, 1981, Ser. No. 325,991
Int. Cl.³ F26B *13/02*
U.S. Cl. 34—82 **5 Claims**



1. A lint screen assembly for use in an elongatd oven having ducts with nozzles for directing heated air against a web carried therethrough, said oven also having a heater and fans with an air passageway between the web and the heater extending substantially across said oven, the improvement comprising:

a transverse filter media serving as an elongated lint screen;

a trackway extending transversely of said oven entirely across said air passageway; said trackway having an imperforate flange covering the edges of said lint screen media;

power-operated means for rolling up a single width of said lint screen on one side of the oven;

an edge of said lint screen on each side thereof in sealing engagement with said imperforate flange;

means intermittently actuating said power-operated means for rolling up a length of lint screen;

means feeding said length of lint screen from the other side of the oven; and

means removing lint from said lint screen during rolling up of the lint screen.

4,435,910

SHOE INSOLE

Michel Marc, 48 Ridge Hill Farm Rd., Wellesley, Mass. 02181

Filed Mar. 12, 1982, Ser. No. 357,784
Int. Cl.³ A43B *13/38, 13/40, 21/32*
U.S. Cl. 36—44 **10 Claims**

1. A shoe insole comprising:

a substantially flat base layer,

a resilient intermediate layer affixed to and overlying the rear portion of the base layer and adapted to conform to the foot having a cupped back for accommodating the heel and a side crown for accommodating the arch,

and a top cushioning layer affixed to and overlying the base and intermediate layers and having a top surface adapted to be in direct contact with the foot,

said resilient intermediate layer being formed thicker at the cupped back to absorb maximum impact usually concentrated thereat than at the side crown where there is provided improved flexibility so as to not interfere with a low arch foot,

said intermediate layer having a plurality of substantially

radially disposed ribs with each rib extending downwardly with the top surface of the intermediate layer having a smooth but contoured surface,

said ribs being spaced along the periphery of the intermediate layer with each rib being arcuate extending from a top peripheral edge of the intermediate layer to a central thin portion thereof,

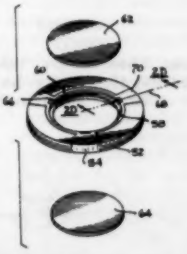
said ribs being wider at the cupped back and at the side crown so as to provide enhanced impact absorption.

4,435,911

INJECTION-MOLDED GAMING TOKEN AND PROCESS THEREFOR

Bernard B. Jones, 3672 S. Highland, Las Vegas, Nev. 89103

Continuation of Ser. No. 15,334, Feb. 26, 1979, abandoned. This application Apr. 26, 1982, Ser. No. 371,638
Int. Cl.³ G09F *3/02*
U.S. Cl. 40—27.5 **4 Claims**



1. A gaming token comprising:

(a) a flat non-metallic annular ring having a central opening therein, said ring comprising:

an annular rib member; and

a plurality of selectively spaced color regions therein sharply defined in geometry by a molding compound of a selected color, in intimate contact with said annular rib member,

(b) a disc-support annulus integral with said annular ring and extending radially into said central opening to a predetermined radial distance,

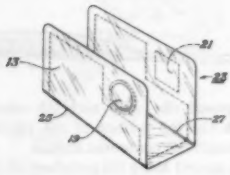
(c) flat metal discs mounted face-to-face on each side of said disc-support annulus and positioned substantially flush respectively with the outer surfaces of said annular ring, and

(d) a fused junction for joining said metal discs together at a portion of their adjacent faces, whereby said metal discs are difficult to remove from said gaming token.

4,435,912
CARD CARRYING MICROFILM AND ASSOCIATED READING LENS

David L. Adrian, Abilene, and Sam H. Young, Fort Worth, both of Tex., assignors to Frank J. King, Abilene, Tex.

Continuation of Ser. No. 888,407, Mar. 20, 1978, abandoned.
This application Feb. 21, 1979, Ser. No. 13,158
Int. Cl.³ G02B 27/04
U.S. Cl. 40—365 1 Claim

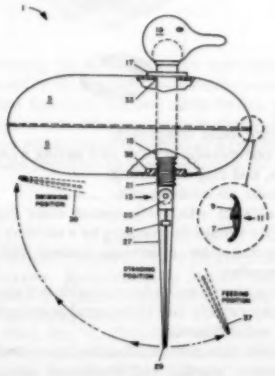


1. An emergency medical data card comprising:
(a) an information portion upon which information appears that can be read in the normal manner with the naked eye, said information portion consisting of a thickness of flexible paper stock having a generally rectangular shape and billfold size, with portions removed at opposite end regions;
(b) a plastic lens disposed at one of said end regions;
(c) a microfilm portion upon which information is recorded and which is disposed at the other of said end regions opposite said one end region;
(d) a pair of juxtaposed flexible clear plastic sheets laminating at least said information portion and said microfilm portion to provide a one-piece, unitary, generally planar card structure;
(e) said lens being a molded integral part of a clear plastic sheet portion of said card;
whereby a reader may bend the card to align and focus the lens on the microfilm for the reading of same without the need for any special auxiliary apparatus.

4,435,913
DECOY

Samuel E. Messina, 2 Snowden Ave., Delmar, N.Y. 12054

Filed May 19, 1983, Ser. No. 496,008
Int. Cl.³ A01M 31/06
U.S. Cl. 43—3 20 Claims



1. A full-bodied decoy for use on land or water, said decoy comprising a top shell, a bottom shell and a shaft-stake keel member; said top and bottom shells having interfitting joint means to join together said top and bottom shells to afford buoyancy for water use of said decoy, said shaft-stake keel member having a shaft, said shaft carrying a head, said shaft being disposed through said top and bottom shells, said shaft, top shell and bottom shell having cooperating securement means for securing said shaft with said top and bottom shells, and for maintaining said top and bottom shells joined together, said stake keel being imbedded in the ground for land use of said decoy, and said stake keel having a counterbalancing weight below the water line of said decoy to maintain said decoy stable in the water.

4,435,914
FISH LURE

Bill K. Norman, Greenwood, Ark., assignor to Norman Manufacturing Co., Inc., Greenwood, Ark.

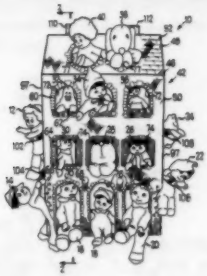
Filed Aug. 28, 1981, Ser. No. 297,348
Int. Cl.³ A01K 85/00
U.S. Cl. 43—42.12 3 Claims

1. A surface retrieve or trolling lure comprising an elongated generally planar body being slightly elongated, egg-shaped in plan including small and large radius front and rear ends, said front end including means for attaching the free end of a fishing line thereto, said body including upper and lower sides and a central upstanding opening formed therethrough including a rear upstanding transverse wall, a spinner journaled in said opening, forwardly opening hook means anchored relative to and trailed behind the large radius end of said body, said lower side being both longitudinally and transversely downwardly convexed substantially throughout the plan area thereof, the portion of said lower side defining the rear marginal edge of said opening including a transversely rounded downward projection terminating downwardly at a level slightly below the portion of said lower side defining the forward marginal portion of the opening, the lower margin of said rear transverse wall defining the forward extremity of said projection, said spinner being generally S-shaped in axial elevation and being journaled for rotation about a horizontal axis extending transversely of said body, said rear marginal edge defining the lower extremity of said rear transverse wall, the upper surface of said body being generally flat and horizontal, said upper surface and said rear transverse wall being devoid of inclined portions thereof operative, responsive to said body being forwardly advanced over the surface of a body of water, to cause water incident thereupon to develop a downward reaction force on said body sufficient to overcome the inherent planing effect developed on the body as a result of the downwardly convex lower side of said body moving over the surface of a body of water, said hook means including an elongated shank terminating at one end in a reverse turned hook portion, the other end of said shank being anchored to said body with said one shank end projecting rearwardly of said body.

4,435,915
HANGING DOLL HOUSE STRUCTURE

John V. Zaruba, and Rouben T. Terzian, both of Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 20, 1982, Ser. No. 340,969
Int. Cl.³ A63H *33/00*
U.S. Cl. 46—12 6 Claims



1. A case for storing and displaying a plurality of toy dolls and the like, comprising:

a housing including a roof, a front wall a first side wall and a second side wall;

a plurality of vertically spaced floors mounted in said housing;

means for displaying the dolls including a plurality of openings in said roof and said front wall, said openings being related to said floors in a manner whereby a floor can support a doll in position for display through an opening;

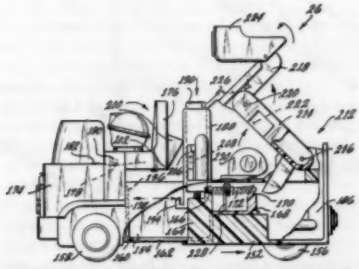
a plurality of elastic members secured to said first and second side walls for holding dolls and the like; and

means for hanging said housing on a wall or the like.

4,435,916
TOY VEHICLE CAPABLE OF CHANGING SIZE AND SHAPE

Noriaki Iwao, and Akira Abe, both of Tokyo, Japan, assignors to Tomy Kogyo Co., Inc., Japan

Continuation-in-part of Ser. No. 170,260, Jul. 18, 1980, abandoned. This application Nov. 25, 1981, Ser. No. 324,734
Int. Cl.³ A63H *11/10, 17/08, 33/30*
U.S. Cl. 46—201 7 Claims



1. A toy vehicle which comprises:

a compound vehicle chassis having a first chassis member and a second chassis member, said first and said second chassis members being movable with respect to each other;

connecting means operatively associated with both said first chassis member and said second chassis member movably connecting said first and said second chassis members such that said first and said second chassis members can move reversibly between a first stable position wherein said first and said second chassis members are located in a first chassis configuration with respect to one another and a second stable position wherein said first and said second chassis members are located in a second chassis configuration with respect to one another, said compound vehicular chassis being a greater first length when said first and said second chassis members are in said first chassis configuration and said compound vehicular chassis being a second length when said first and said second chassis members are in said second chassis configuration, said first length greater than said second length;

a first spring member attaching between said first and said second chassis member, said first spring member biasing said first and said second chassis members to said first chassis configuration;

a retaining member movably located on one of said first and said second chassis members and connectable to the other of said first and said second chassis members, said retaining member movable on said one of said first and said second chassis members between a locking and a releasing position, said retaining member including detent means located thereon, said detent means connecting to said other of said first and said second chassis members when said retaining member is is said locking position to retain said first and second chassis members in said second chassis configuration against the bias of said first spring member;

a second spring member associated with said retaining member, said second spring member biasing said retaining member from said releasing position to said locking position;

a vehicle body having a plurality of body elements forming the outside surface of said vehicle, at least one of said body elements fixedly located on said first chassis member, at least a second of said body elements fixedly located on said second chassis member, a least a third of said body elements pivotably located on said first chassis member, at least a fourth of said body elements pivotably located on said second body chassis;

said first body element and said second body element located adjacent of one another when said first and said second chassis members are in said second chassis configuration, said first and second body elements spaced apart from each other so as to form a space between each other when said first and second chassis members are in said first chassis configuration, said third body element located adjacent to said first body element when said first and second chassis members are in said second chassis configuration and pivotable on said first chassis member when said first and said second chassis members are in said first chassis configuration so as to become located in said space when said first and second body members are in said first chassis configuration,

a third spring element attaching to said third body elements, said third spring element biasing said third body element towards said space when said first and second chassis members are in said first chassis configuration;

said third and said fourth body elements each including a first and second surface, said first surface of both said third and said fourth body elements exposed and forming a portion of the outside surface of said vehicle when said first and said second chassis members are in said first chassis configuration and said second surface of both said third and said fourth body elements exposed and forming a portion of the outside surface of said vehicle when said first and said second chassis members are in said second chassis configuration;

said fourth body element including a first body section pivotably attaching to said second chassis member, a second body section pivotably attaching to said first body section and a fourth spring member connecting between said first and said second body sections and biasing said second

body section from a folded position with respect to the first body section to an extended position with respect to the first body section, a portion of said first body section abutting against and held by said first chassis member when said first and said second chassis members are in said second chassis configuration pivoting said first body section on said second chassis member and said second body section on said first body section to position said second body section in said folded position against the bias of said fourth spring member, said portion of said first body section releasing from said first chassis member when said first and said second chassis members are in said first chassis configuration and said fourth spring member biasing said second body section to said releasing position with respect to said first body section;

the shape of said vehicle as determined by the spatial relationship between said plurality of body elements being different when said first and said second chassis members are in said first chassis configuration and when said first and said second chassis members are in said second chassis configuration.

4,435,917

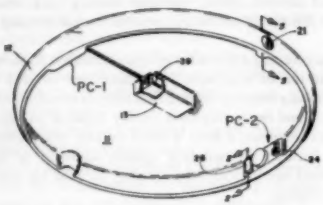
LIGHTING SYSTEM FOR ROTATABLE TOY

William B. Lee, 252 South 800 East, Salt Lake City, Utah 84102

Filed Apr. 30, 1982, Ser. No. 373,427

Int. Cl.³ A63H *33/26*

U.S. Cl. 46—228 **6 Claims**



1. In a toy of the type having a body rotatable about a central axis and at least one lamp, a battery and associated circuit to light said lamp, the improved lighting system which comprises a solid state astable multivibrator circuit adapted to generate pulses to light said lamp for a predetermined on-time at predetermined intervals said circuit including a first resistor, a second resistor and a capacitor arranged in series so that said second resistor and capacitor determine said on-time of said lamp and said first resistor, said second resistor and said capacitor in series determine said interval; a resistive switch interposed in said circuit in parallel with said first resistor, said resistive switch including a third resistor and a normally open switch arranged so that when said normally open switch is closed said first resistor and said third resistor are in parallel to each other and are each in series with said second resistor and said capacitor, and said normally open switch includes means to close said switch in response to rotation of said toy about its central axis faster than a predetermined rate.

4,435,918

DECORATIVE FLOWER POT

Guey-Ji Shain, 113, Yu Miao Li, Miao Li Chen, Taiwan

Filed Dec. 23, 1981, Ser. No. 333,730

Int. Cl.³ A01G *25/00*

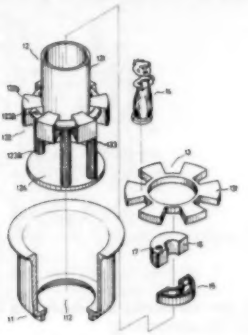
U.S. Cl. 47—79 **2 Claims**

1. A horticultural pot comprising:

two coaxially positioned pots including a bottomless upper pot having smaller diametrical dimension and a lower pot having larger diametrical dimension with a drainage hole; the said upper pot being at a level where its lower edge is slightly below the top edge of said lower pot; around the lower part of said upper pot there being externally and peripherally provided a plurality of radially distributed, hollow structures to define first reservoir means for receiving water, and conduit means intercommunicating adjacent ones of said first reservoir means;

a drainage hole cover which closes said drainage hole;

a plurality of hollow columns supporting said first reservoir means and said upper pot; the lower end of each said



column having an opening through said drainage hole cover and open to the outside, the upper end of each said column being blind; the side wall of each said column being densely provided with tiny perforations to communicate the interior of said column to the interior of said lower pot; at least part of the bottom of said first reservoir means being water-pervious; the top side of said reservoirs being substantially at the same level to define a platform.

4,435,919

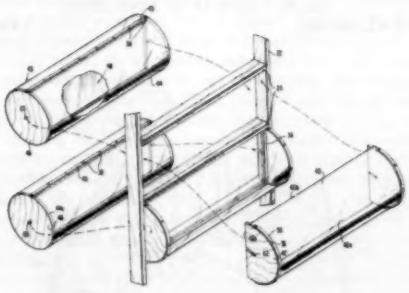
INTEGRATED WINDOW AND THERMAL SHUTTER ASSEMBLY

Leandre Poisson, P.O. Box 275, Harrisville, N.H. 03450

Filed Sep. 10, 1981, Ser. No. 300,821

Int. Cl.³ E05B *65/04*

U.S. Cl. 49—63 **8 Claims**



1. An integrated window and thermal shutter assembly for closing a rectangular opening within a building wall or the like to permit controlled passive solar heating of a building interior, said assembly comprising:

a closed end elongated cylinder mounted for rotation about its axis within said window opening and in the plane of said rectangular opening, said cylinder being sized to said rectangular opening and said cylinder being formed of a sheet of light transmissive material, and

an opaque, relatively thick rectangular panel of thermal insulation material mounted internally of said cylinder and

spanning diametrically across said cylinder to separate the interior of said cylinder into two dead air spaces;

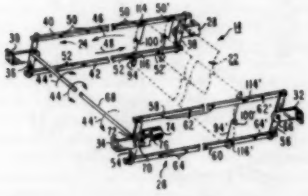
whereby, rotation of said cylinder to a position with the thermal insulation material panel parallel to the plane of said rectangular opening results in complete blockage of light and thermal energy from the building exterior to the building interior and vice versa while, rotation to an angularly displaced position therefrom permits selectively light and thermal radiation to enter the interior of the building, or leave the same.

4,435,920

SHUTTER CONSTRUCTION

Susumu Osaka, and Minoru Toda, both of Machida, Japan, assignors to RCA Corporation, New York, N.Y.

Filed Apr. 26, 1982, Ser. No. 371,740
Int. Cl.³ E05F *17/00*; E06B *7/08*
U.S. Cl. 49—82 **11 Claims**



1. A shutter construction comprising:

a plurality of slats, each slat having first and second opposite ends, two relatively long, parallel opposite edges, and a central axis parallel to and between these edges;

a pair of support brackets for each slat, one bracket secured to one end of each slat and the other bracket secured to the opposite end of each slat, each bracket including two pivot means permitting rotation of the bracket about two spaced points, respectively, one point on one side of the central axis and the other point spaced from the one point on the other side of the central axis;

first and second parallel support links, the first of said links adjacent to one end of the slats and the second of said links adjacent to the other end of the slats, the slats being perpendicular to said links and being spaced from one another along the length of links, each support bracket at one end of the slats being supported by said first link at one end of its pivot means and each support bracket at the other end of the slats being supported by said second link at the corresponding one of its pivot means;

first and second support means, said first support means adjacent to one end of the slats and said second support means adjacent to the other end of the slats, each support bracket at one end of the slats being supported by said first support means at the other of its pivot means along a line parallel to said first link and each support bracket at the other end of the slats being supported by said second support means at the other of its pivot means along a line parallel to said second support link; and

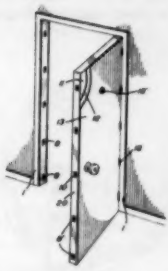
drive means for concurrently driving said first and second support links in the same direction along the length dimension of said links relative to said first and second support means for concurrently rotating the slats about axes parallel to their central axes.

4,435,921

SAFETY DOOR

Manuel Marin, 6777 Pie IX Blvd., Apt. 14, Montreal, Quebec, Canada H1X 2C7

Filed Apr. 5, 1982, Ser. No. 365,489
Int. Cl.³ E05C *9/00*
U.S. Cl. 49—395 **2 Claims**



1. In a door and associated door frame, the door including a lock operating a bolt by use of a key, the bolt then operatively projecting from the free edge of the door and engaging in an opening of the door frame, said free edge being provided with a series of spaced-apart cavities along said edge, a lever pivoted in the door frame and operated by said bolt, and a series of auxiliary bolts installed in the door frame and operated by said lever to move from a withdrawn unlocking position to a projecting locking position, wherein their free ends project from the door frame and engage into said cavities of the door, said auxiliary bolts being substantially parallel, horizontal and fixed at their opposite ends to a generally vertical common bar located within said door rame, at least two lever arms of equal length pivotally connected to the bar and to the door frame and equally inclined in upward direction away from said auxiliary bolts, said lever pivotally connected to said common bar and, upon being pivoted by said bolt, moving said common bar from a lower position in which the auxiliary bolts are in their withdrawn position, to a higher position in which the auxiliary bolts are in their projecting position, whereby said auxiliary bolts tend to move to their withdrawn position under gravity.

4,435,922

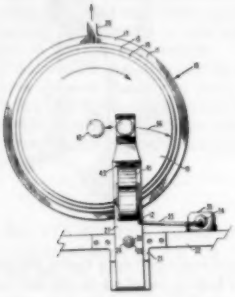
APPARATUS FOR GRINDING THE BACK SURFACES OF RECORD MOLDING STAMPERS

John J. Prusak, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 14, 1981, Ser. No. 302,128
Int. Cl.³ B24B *7/04*
U.S. Cl. 51—58 **7 Claims**

1. An apparatus for grinding the back surface of record molding stampers, said apparatus comprising in combination: a stamper holder means and a grinding means; said stamper holding means including a disc-shaped member having a diameter at least as large as the stamper to be ground by said apparatus, a drive means for rotating said disc-shaped member about the center thereof, and means associated with said disc-shaped member for securing a stamper to be ground to a surface of the disc-shaped member; said grinding means including an elongated arm member having first and second terminal end portions, said arm member being pivotally mounted at a point intermediate between said first and second terminal end portions, said first terminal end portion having positioned thereon abrasive means for grinding said stamper, said grinding means further including pressure applying means positioned to apply pressure to said second terminal end portion and thereby pivotally move said arm member from a first position to a second position and to apply a given amount of pressure at the first

terminal end portion, said grinding means further including oscillating means for continuously reciprocating said arm in a uniform manner radially back and forth across the back surface of the stamper in a plane approximately parallel to the plane of rotation of the disc-shaped member, said grinding means being spacially positioned relative to the stamper holding means so that when the arm is moved from said first position to said second position the abrasive means is brought into grinding contact at a said given amount of pressure with a stamper



mounted on said stamper holding means; whereby when said stamper is mounted back surface out on the disc-shaped member of the stamper holding means, and said disc-shaped member is rotated by said drive means, and said grinding means is activated by the pressure applying means and oscillating means, the abrasive means on the arm member is moved from said first position to said second position into oscillating pressure contact with the back surface of said stamper, causing the back surface of the stamper to be ground, removing surface defects.

4,435,923

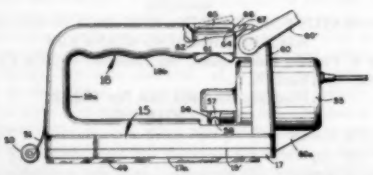
ABRADING TOOL

Ralph Regina, 5471 SW. 16th St., Plantation, Fla. 33317

Filed Mar. 22, 1982, Ser. No. 360,736

Int. Cl.³ B24B *23/04*; A47L *13/00*

U.S. Cl. 51—170 TL **12 Claims**



1. In an abrading tool having a base and a handle attached to said base and extending on one side of the base, said base having a longitudinal recess therein which is open at the opposite side of the base from said handle, the improvement which comprises:

a pair of rigid clamping members extending lengthwise in said recess in confronting relationship to one another, at least one of said clamping members being retractable away from the other clamping member;

and an abrasive pad sandwiched between said clamping members in said recess and projecting beyond said opposite side of the base for engagement with grout exposed between neighboring tiles in a tiled wall or floor;

a holder in said recess carrying said clamping members;

an electric motor mounted on said base and having a rotary shaft operatively coupled to said holder to reciprocate the latter in response to rotation of the shaft;

said handle being attached to the base at the front end of the abrading tool; and

a mounting structure carrying the motor and releasably attached to the handle and the base at the opposite end of the abrading tool.

4,435,924

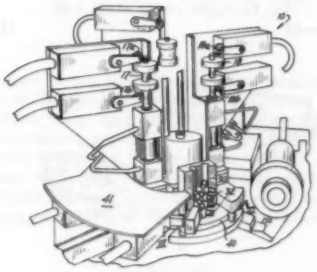
METHOD OF GRINDING WORKPIECES

Jack L. Garnett, Beloit, Wis., assignor to The Bendix Corporation, Cleveland, Ohio

Division of Ser. No. 206,122, Nov. 12, 1980, Pat. No. 4,368,595. This application Sep. 30, 1982, Ser. No. 431,513

Int. Cl.³ B24B *1/00*

U.S. Cl. 51—327 **8 Claims**



1. A method of grinding a workpiece using a grinding apparatus of the type having a frame, a movable grinding member coupled to the frame for grinding a surface of workpiece at a grinding station, a carrier movably coupled to said frame having a loading station and an unloading station and a workpiece-handling apparatus coupled to the frame adjacent to the carrier and having at least two workpiece receiving apertures for receiving a workpiece at the unloading station and for loading workpieces into and discharging workpieces from the carrier, the steps of the method comprising:

positioning a workpiece adjacent one of the workpiece-receiving apertures of the workpiece-handling apparatus;

loading the workpiece from the carrier into the adjacent aperture;

rotating the workpiece-handling apparatus through a partial revolution to move the one aperture adjacent to a loading station of the carrier;

moving the workpiece from the apparatus to the carrier;

moving the carrier to bring a first surface of the workpiece adjacent the grinding member at the grinding station grinding the workpiece with the grinding member;

moving the carrier to bring the workpiece to the unloadng station;

moving the workpiece from the carrier of the unloading station to an aperture of the workpiece-handling apparatus;

rotating the workpiece-handling apparatus through a partial revolution in a plane to an unload station adjacent the carrier to expose another surface;

reloading the workpiece into the carrier;

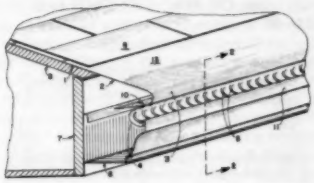
grinding the other surface; and

unloading and discharging the workpiece.

4,435,925
SHIELD FOR EAVES DRAIN GUTTER

Henry J. Jefferys, P. O. Box 6029, Norfolk, Va. 23508

Continuation-in-part of Ser. No. 668,324, Mar. 18, 1976, abandoned. This application Oct. 30, 1978, Ser. No. 955,862
Int. Cl.³ E04D *13/06*
U.S. Cl. 52—12 **8 Claims**

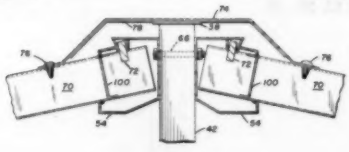


1. A gutter shield of integral construction adapted to be mounted under the eaves of a building and above a conventional drain gutter comprising a flat mounting portion, a downwardly sloped collector portion which tangentially merges with a curved nose portion, a re-entrant portion emerging tangentially from below said nose portion as a continuation thereof and downwardly sloped in a direction substantially opposite to the direction of slope of said collector portion, a leg portion pendant from said re-entrant portion as a continuation thereof and comprised of a multitude of uniformly spaced parallel teeth extending downward and terminating adjacent the outer lip of said drain gutter, the spaces between said teeth having a length to width ratio between 3:1 and 9:1 and the area of said spaces comprising between 30% and 60% of the total area of said leg portion, said teeth originating at a sharply defined angle of between 90° and 140° with respect to said re-entrant portion, and a conductor surface beginning at the locus of origination of said leg portion as a continuation of said re-entrant portion and extending inwardly in the general direction of said mounting portion, the outermost extremity of said nose portion projecting ½" to 1½" beyond said leg portion.

4,435,926
RIDGE ROOF

Francis L. Struben, 3870 Jarrettsville Pike, Jarrettsville, Md. 21062

Filed Sep. 1, 1982, Ser. No. 413,712
Int. Cl.³ E04D *13/00*
U.S. Cl. 52—3 **12 Claims**



1. A roof structure, comprising:

a center support component, said center support component being vertically adjustable to a plurality of heights, said center support component being suitably affixed to a structure requiring a new roof structure;

a first pair of roof panel support members, said roof panel support members being spaced apart and suitable affixed to said center support component, said roof panel support members being longitudinally parallel to said center support component to which affixed, said first pair of roof panel support members being channel-like in configuration;

a second pair of roof panel support members, said second pair of roof panel support members being spaced from said first pair of roof panel support members, said second pair of roof panel support members being spaced apart from each other and being suitably affixed to said structure requiring a roof structure, said second pair of roof panel support members being angle-like in configuration;

a plurality of interlocking roof panels, said plurality of roof panels being of a corrugated configuration, each roof panel of said plurality of roof panels having a first end and a second end, said first end of each said roof panel being slideably and removably inserted into and suitably affixed to one of said first pair of roof panel support members, said second end of each said roof panel being set upon and suitably affixed to one of said second pair of roof panel support members;

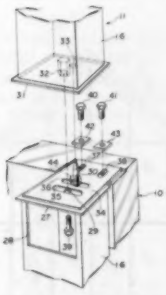
a plurality of locking bars, each locking bar of said plurality of locking bars being slideably and removably set so as to lock one of said roof panels to one of said first pair of roof panel support members;

a ridge cap member, said ridge cap member being suitably affixed to said plurality of roof panel members, said ridge cap member being located and affixed to said plurality of roof panel members at said first end thereof where said first end inserts into and is affixed to said first pair of roof panel support members.

4,435,927
MODULAR BUILDING STRUCTURE AND MODULE FOR IT

Hiroaki Umezu; Akira Kishi, both of Tokyo, and Hiroshi Yamagami, Hachioji, all of Japan, assignors to Misawa Homes K.K., Tokyo, Japan

Filed Jun. 19, 1981, Ser. No. 275,152
Int. Cl.³ E04B *1/343*
U.S. Cl. 52—79.13 **1 Claim**



1. A modular building structure which comprises an upper and lower structure, each having:

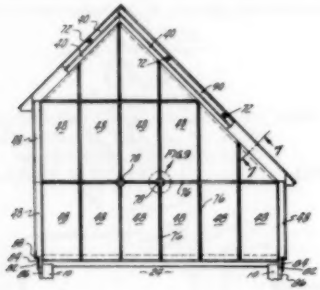
(a) a frame including a horizontal base member of a rectangular shape and four vertical corner posts of the same length secured at their lower ends to the four corners of said base member and having a tubular construction;

(b) a first wall member attached to two adjacent ones of said four corner posts, said first wall member being vertically coextensive with said corner posts; and

(c) a second wall member attached to one of said two adjacent corner posts and the corner post disposed in diagonal relation to the other of said two adjacent corner posts, said second wall member being vertically coextensive with said corner posts; each of the corner posts of said lower module having an upper end member fixedly secured to its upper end, a bolt receiving hole being formed through said upper end member, a guide pin being fixedly secured to said upper end member and extending upwardly therefrom in parallel relation to the longitudinal axis of said corner post, each of the corner posts of said upper module having a lower end member fixedly secured to its lower end, a bolt receiving portion being formed on said lower

end member, a guide pin receiving hole being formed through said lower end member, the corresponding corner posts of said upper and lower modules being connected in end to end relation, said guide pin of each corner post of said lower module passing through said guide pin receiving hole of the corresponding corner post of said upper module, and a bolt passing through said bolt receiving hold of each corner post of said lower module and being threaded into said bolt receiving portion of the corresponding corner post of said upper module; the corner posts of the lower module, except for the corner post adjacent to said first and second wall members, being attached slightly swingingly movable about their lower end; said upper module including a pair of connecting plates attached to the upper end members of the two corner posts which are disposed in diagonal relation and to which said first and second wall members are attached, said connecting plates extending outwardly from said corner posts to be laid over the upper surfaces of said first and second wall members, respectively, each of said connecting plates having a pair of first slots extending parallel to the plane of a respective one of said first and second wall members, and having a pair of second slots extending perpendicular to the plane of the respective wall member, said guide pin and said bolt passing through said pair of first slots, respectively, and a pair of bolts passing through said pair of second slots into the upper portion of a respective one of said first and second wall members.

4,435,928
LOW ENERGY BUILDING
Edwin Huling, Houghton Hill Rd., Thetford Hill, Vt. 05074
Filed Mar. 30, 1981, Ser. No. 249,149
Int. Cl.³ E04B *7/02*
U.S. Cl. 52—90 **17 Claims**



1. A low energy building having one or more stories adapted to be erected one story at a time on an existing foundation from prefabricated components comprising:

a modular post and beam framing system including:

short, integral beams of at least two modules length having vertical rectangular joist notches cut therein at modular increments along their length,

floor joists having their ends seated in said notches,

a plurality of boards laid on top of said beams and said joists forming a floor at each story of the building,

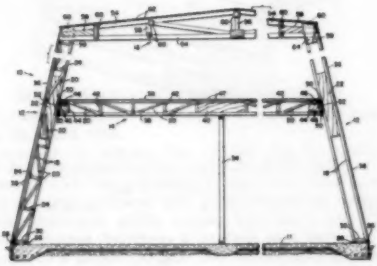
posts upstanding from said floors at suitable spacing and height to provide modular openings for the side and end walls of the building

roof rafters supported at one of their ends on said beams and meeting at another of their ends at the roof ridge,

a plurality of prefabricated laminated panels secured to said framing system and covering said openings;

said panels having a central core member of insulating material, an outer layer of siding material connected to one side of said core by a layer of adhesive, and an inner layer of finish material connected to the other side of said core by a layer of adhesive.

4,435,929
MODIFIED A-FRAME STRUCTURE
Hugh M. Bussell, 251 S. Willow, Cookeville, Tenn. 38501
Filed Aug. 23, 1982, Ser. No. 410,327
Int. Cl.³ E04C *3/02*; E04D *3/35*
U.S. Cl. 52—93 **10 Claims**



1. A floor truss-wall truss assembly comprising a wooden floor truss joined to a wooden wall truss at an angle such that said floor truss is an A cross-bar member and said wall truss is an A upright member, said wall truss having a single bearing block adjacent the inside of an inner chord member thereof occupying the whole space between upper and lower chords, said floor truss having two end blocks separated by a spacer member extending between said upper and lower chords of said floor truss with said upper and lower chords protruding beyond an outer end of each of said two end blocks so as to fit respectively over and under the upper and lower ends of said single bearing block and means holding said two end blocks in position and fastening said end blocks and said upper and lower chords of said floor truss to said inner chord member of said wall truss.

4,435,930
TRAFFIC SAFE POLE
Oscar W. Plym, Generalsvägen 133, 180 21 Österskär, Sweden
Filed Oct. 14, 1980, Ser. No. 196,570
Int. Cl.³ E04H *12/02*; E04B *1/54*
U.S. Cl. 52—98 **7 Claims**

1. A traffic safe pole for supporting traffic signs, road lighting and the like, characterized in that the pole is divided substantially perpendicularly to its longitudinal direction to thereby comprise a first pole portion to which a traffic sign and the like may be attached; and a second pole portion jointed to said first portion adapted to be anchored in a suitable manner; said joint substantially consisting of a sleeve secured to and arranged relative to the two pole portions so that its tensile strength in substantially its longitudinal direction which is

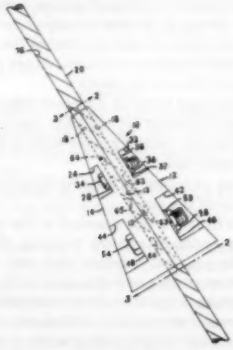
coextensive with the pole portions considerably exceeds the tensile strength in its circumferential direction; said pole portions being structurally coextensive with coextensive surfaces; said sleeve consisting of reinforced plastic with its reinforcement provision directed in the longitudinal direction of the sleeve; the means for securing said sleeve to said pole portions consisting of glue which glues the sleeve to coextensive surfaces of said pole portions to thereby provide a homogenous pole; said sleeve being located on the inner shell surface of said pole portions; a ring, preferably of steel, located and glued on the outside of each of said pole portions at the joint, where each ring projects in longitudinal direction of the pole portion beyond the end surface of the associated pole portion, and where the inner diameter of the projecting portion of the ring substantially agrees with that of the pole portion, each ring constituting a cylindric cup located on the end of the associated pole portion with an axial hole in the cup bottom, and the end surfaces of the projecting portions of the rings arranged so as to abut each other; a first inner ring and a second inner ring, preferably of steel, located within said sleeve and glued to its inner shell surface in such a manner, that said first inner ring is located within said first pole portion and projects in the longitudinal direction beyond the end surface of the pole portion a distance substantially equal to but no greater than said end surfaces of said cup-shape ring, and said second inner ring is located in corresponding manner within said other pole portion; said traffic safe pole being further characterized in that in the inner shell surface of the projecting portion of each of said cup-shaped rings a circumferential groove is provided in connection to the end surface of the projecting portion, which groove is arranged so that the flank of the groove which is closest to said projecting end surface and the projecting end surface together form a sharp edge about the inner edge of said projecting end surface, and that the outer shell surface of the projecting portion of said first inner ring and said second inner ring includes a groove which is located in the circumferential direction in connection to the end surface of the projecting portion in a manner corresponding to the cup-shaped rings so that a sharp edge is formed about the outer edge of said projecting end surface.

4,435,931

GUY WIRE PROTECTOR DEVICE

James A. Newbanks, 205 W. Allen St., Apt. 318, Springfield, Ill. 62704

Filed Jan. 29, 1981, Ser. No. 229,465
Int. Cl.³ E04H 12/20
U.S. Cl. 52—147 **18 Claims**



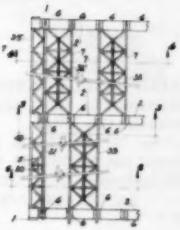
1. A device mountable on guy wires and like supports for deflecting and splitting ice sheaths that form on the guy wires and subsequently slide therealong, each guy wire having opposed ends, one of which opposed ends is anchored to a fixed member and the opposite of which is connected to a structure to be supported thereby, said device comprising a pair of substantially alike interconnectable members, each member having spaced first and second ends of substantially semi-circular cross-section, the radius of said first end being smaller than the radius of the second end, an outer surface, and a substantially planar mating surface opposite the outer surface, said spaced first and second ends of each of said members defining a respective semi-frusto-conical shaped body envelope for each member, said outer surface of each member being disposed within said respective body envelope for such member, said mating surfaces having a longitudinal channel formed therein including a channel wall extending between said first and second ends, said outer surface of each of said interconnectable members tapering from said second end towards said first end to adjacent said channel wall at said first end, said members adapted to complementarily engage a guy wire when positioned therearound in a mating condition with said mating surfaces positioned adjacent to one another, said channels being registrable with one another when said members are so disposed in a mating condition to engage opposite sides of the guy wire about which said members are positioned, and means for connecting said members to one another about the guy wire at a fixed location therealong spaced from the opposed ends thereof, whereby said device facilitates the deflection and splitting of ice sheaths impacting said device at the first end thereof.

4,435,932

ALTERNATING V-TRUSS ROOF SYSTEM AND METHOD OF ERECTION

Paul A. Seaburg, and Richard W. Lautensleger, both of Middletown, Ohio, assignors to Armco Inc., Middletown, Ohio

Filed Oct. 19, 1981, Ser. No. 312,711
Int. Cl.³ E04B 7/00
U.S. Cl. 52—263 **26 Claims**

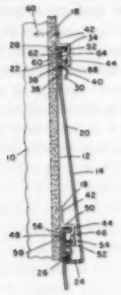


1. A roof supporting structure comprising a series of spaced apart rafters lying in parallel relation, a series of elongated V-truss units extending between the rafters in parallel relation at spaced apart intervals to define rows of V-truss units, said elongated V-truss units each comprising a spaced apart pair of top chords and at least one bottom chord defining the apex of the V-truss unit, and diagonally disposed web members interconnecting said top and bottom chords, said top chords being supported at their opposite ends on said rafters, the V-truss units in at least one given row lying in alternating relation with respect to the V-truss units in the next adjacent row, and means interconnecting the ends of the top chords of the V-truss units in one row with the adjoining ends of the top chords of the V-truss units in the next adjacent row.

4,435,933
VINYL SIDING ATTACHMENT

Thomas R. Krowl, N. Tonawanda, N.Y., assignor to National Gypsum Company, Dallas, Tex.

Filed Aug. 10, 1981, Ser. No. 291,639
Int. Cl.³ E04D 1/34, 3/362, 3/363
U.S. Cl. 52—309.1 10 Claims

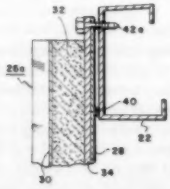


1. In combination, an elongate section of siding and a siding clip for supporting said siding, said clip comprising a back for disposition against a supporting surface, an upper hanger portion suitable for attachment to such a supporting surface, and a lower channel portion, said channel portion having a channel formed extending therethrough from side to side, said channel having internally raised portions disposed for engaging and restricting removal from said channel of non-uniform thickness elements extending along the top portion of said elongate siding section, said siding having a face portion, a top concealed portion, a bottom rearwardly extending spacer flange, and, at the rearward end of said spacer flange, a short interlock flange, said siding concealed portion including an attachment portion having a plurality of spaced apart, longitudinally aligned nailing slots, said slots being disposed between two spaced parallel guide ribs, said attachment portion being disposed within said clip channel and said guide ribs being restricted from removal from said channel by said internally raised portion.

4,435,934
PREFABRICATED PANEL CONSTRUCTION SYSTEM

Kwon S. Kim, Oklahoma City, Okla., assignor to Star Manufacturing Co., Oklahoma City, Okla.

Continuation of Ser. No. 47,132, Jun. 11, 1979, abandoned, which is a division of Ser. No. 893,435, May 4, 1978, Pat. No. 4,295,304. This application Jul. 1, 1981, Ser. No. 279,574
Int. Cl.³ E04C 1/00
U.S. Cl. 52—309.7 6 Claims



1. A prefabricated wall panel for use with like panels in constructing the walls of a building, comprising:

a body of insulating material having opposed top and bottom ends;

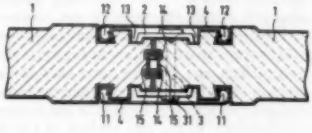
interior and exterior corrugated metal sheets disposed on opposite major faces of said insulating body, and

at least one fastener strip disposed between said interior metal sheet and said insulating body to provide strength at a selected point of attachment of the panel to support members, said fastener strip being disposed between spaced apart corrugated grooves in said interior metal sheet for holding said fastener strip in a predetermined position during fabrication of the panel whereby the location of said fastener strip can be identified from the exterior of the panel, and said fastener strip and said interior metal sheet extend beyond said exterior metal sheet and said insulating body at one of said ends of said insulating body to permit installation of a fastener through only said fastener strip and said interior metal sheet into a support member for said panel from the outside of the building.

4,435,935
PANEL JOINING SYSTEM

D. Juan Larrea, Pamplona, Spain, assignor to Perfil En Frio, S.A. (PERFRISA), Pamplona, Spain

Filed Aug. 21, 1981, Ser. No. 294,922
Claims priority, application Spain, Oct. 8, 1980, 253296; Oct. 8, 1980, 253397
Int. Cl.³ E04B 5/52
U.S. Cl. 52—461 8 Claims



1. A panel-joining system for panels, said panels being of the type which include an exterior and an interior rigid sheet having an insulating fill therebetween, said panels having ends to be joined, the ends being arranged flush with one another, said system comprising:

(a) an exterior rigid sheet of a panel which sheet includes:
  (i) a first exterior shaped section near one end of the sheet, said shaped section being a groove with respect to the exterior plane of the panel;
  (ii) a second exterior shaped section, said second shaped section being a groove arranged between the first shaped section and said one end of the sheet; and
  (iii) said end including an exterior flange perpendicular to the outer plane of the panel;

(b) an interior rigid sheet of the panel which includes:
  (i) an interior shaped section near one end, said interior shaped section being a groove with respect to the plane of the panel; and
  (ii) said end including an interior flange perpendicular to the plane of the panel;

(c) the panel having a seal disposed at the end thereof, said seal being sealingly situated between the exterior and interior flanges, and wherein said seal, upon abutment with a corresponding seal of a panel to be joined, cooperates to provide a space between midportions of the seals;

(d) at least two elastic covers, said elastic covers being insertable into the corresponding exterior and interior first shaped sections of the panels to be joined;

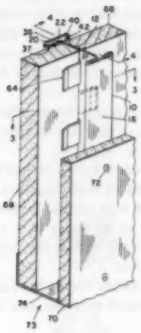
(e) a load spreader plate for insertion into corresponding second shaped sections of the panels to be joined, said load spreader plate being operative for holding the panels in abutment; and

(f) means for holding said load spreader plate in position between the abutting panels for supporting said panels.

4,435,936
METAL STUD

Edward J. Rutkowski, Kenmore, N.Y., assignor to National Gypsum Company, Dallas, Tex.

Filed Feb. 8, 1982, Ser. No. 346,402
Int. Cl.³ E04B 1/00
U.S. Cl. 52—481 10 Claims



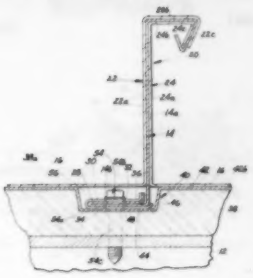
1. A fire-resistant metal stud for supporting a vertical wall comprising an elongate formed sheet metal body having an elongate first side and, opposite thereto, an elongate second side, elongate means central thereof adjoining said first side and said second side, means on said second side for affixing wallboard thereto, a pair of flanges on said first side adapted to have the edges of a pair of wallboards affixed against the inner side thereof, whereby said flanges would be disposed on the surface of a wall formed by said wallboards, said pair of flanges including at least one flange which is formed from an inner layer sheet of metal extending from the inner edge of the flange to the outer edge of the flange whereat the metal is reversely folded and extends back to said inner edge forming an outer layer, said inner layer having means for retarding the increase in temperature of said inner layer and the wallboard surface adjacent thereto when said wall is subjected to a fire on the wall second side, said means for retarding comprising structure which directs cooler gases to the interface of said inner layer and said wallboard, said structure comprising a plurality of outwardly projecting dimples, said stud further comprising an internal gap formed between said flange inner layer and outer layer, whereby air within said internal gap that becomes heated will tend to move vertically upward, within said gap.

4,435,937
CONCEALED FASTENER SUPPORT FOR INTERLOCKED CHANNEL SECTION PANELS

Lester W. Stone, Germantown, Ohio, assignor to Armco Inc., Middletown, Ohio

Filed Mar. 8, 1982, Ser. No. 356,126
Int. Cl.³ E04D 3/24, 3/36
U.S. Cl. 52—520 11 Claims

1. In a roof structure, a series of interlocked roof panels having adjacent margins forming rib joints and being of self-supporting capacity and closing the space between said purlins, rigid insulation sandwiched between said panels and said purlins, an integral, one-piece bearing support member overlying said rigid insulation of each said rib joint, said bearing support member comprising a pair of upper coplanar portions and an intermediate lower planar portion lying in a plane parallel to that of said coplanar portions, said coplanar portions and said intermediate lower portion being joined by a pair of downwardly extending portions to form a recess extending fully between opposite edges of said bearing support, said panels being connected to said bearing support, and a concealed fastener and associated through fastener means positioned along said rib joint in said recess to anchor said bearing support member to said purlin, each said concealed fastener having a foot extending from the lower end thereof for anchoring pairs of rigid interlocked metal panels at said rib joints, the foot of each said concealed fastener being contiguous with said lower

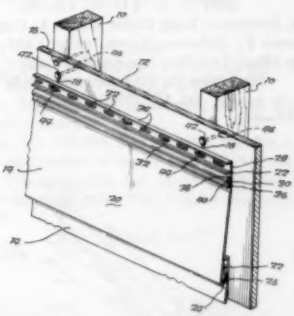


portion, said recess of said bearing support member being tightly pulled into said rigid insulation an amount about equal to the depth of said recess such that the lower surfaces of said coplanar portions are substantially contiguous with the upper surface of said rigid insulation.

4,435,938
VINYL SIDING ATTACHMENT

Edward J. Rutkowski, Kenmore, and Thomas R. Krowl, North Tonawanda, both of N.Y., assignors to National Gypsum Company, Dallas, Tex.

Filed Nov. 17, 1981, Ser. No. 320,613
Int. Cl.³ E04D 1/00
U.S. Cl. 52—521 5 Claims



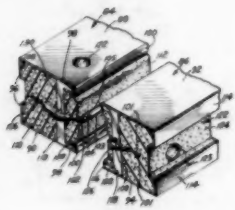
1. In an exterior wall structure, a plurality of sections of elongate vinyl lap siding, said vinyl siding comprising an elongate thin face section of potentially deformable vinyl exposed and forming the exterior surface of said wall structure and an elongate concealed top portion along the top edge, said top portion having a plurality of holes for the reception of fasteners at spaced positions therealong, and a plurality of preformed, relatively rigid, individual clips, said clips supporting solely a thin section of vinyl siding, said clips each having a top portion and a bottom portion, said clip top portions being affixed to the structure sheathing or framing members, said clip bottom portions having outwardly directed portions extending from behind the siding through said holes terminating in a preformed relatively rigid upwardly extending means for retaining the siding on said clip bottom portions, said clip bottom portions fitting loosely through said holes, whereby the vinyl siding top portion is free to expand and contract relative to said clips when said siding is subjected to temperature changes.

4,435,939

PANEL LOCKING MEANS

Richard E. Hird, Catlin, Ill., assignor to Estad Products, Inc., Danville, Ill.

Filed Aug. 15, 1980, Ser. No. 178,539
Int. Cl.³ E04C 1/10
U.S. Cl. 52—582 9 Claims



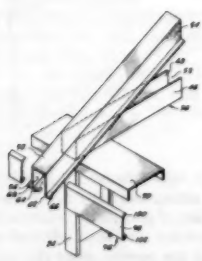
1. A panel locking supporting means for each of a pair of adjacent panels to be joined together, each panel including a pair of relatively rigid wall members with heat insulating material disposed therebetween, said locking supporting means comprising a rigid housing having spaced sides and means for joining the edge portions of the wall members together, said housing further comprising extensions respectively extending from opposite ends of the spaced sides and having at least one slot for receiving retaining means therein, and elongated retaining means substantially perpendicular to said housing extending through said slot and having its ends positioned within said joined edge portions to positively position said housing with respect to said wall members.

4,435,940

METAL BUILDING TRUSS

Jeanne A. Davenport, Long Beach; Robert L. Campbell, Irvine, and James F. Gallaway, Tustin, all of Calif., assignors to Angeles Metal Trim Co., Los Angeles, Calif.

Filed May 10, 1982, Ser. No. 376,527
Int. Cl.³ E04B 7/08
U.S. Cl. 52—641 7 Claims



1. A unitary metal building truss of lightweight metal adapted to span an area defined by vertical walls having outer edges, said truss including bottom chord member resting upon said vertical walls and having ends extending to at least the outer edges of said vertical walls, a pair of top chord members each having an outer end and an inner end, each of said top chord members extending from at least the ends of said bottom chord member and secured thereto angled upward and inward toward each other and each inner end abutting the other and secured to each other forming a crown wherein the bottom and top chord members form a triangle, and a plurality of diagonal members extend between the bottom and top chord members and are secured thereto, wherein a plurality of said trusses are used to cover said area defined by said vertical walls the improvement including:

said bottom chord member being of lightweight material and having a generally U shaped cross section formed by a web and two legs extending from said web and said web forms a base with said legs projecting upwardly forming a channel;

said top chord members each being of lightweight metal and in cross section possessing a hat shaped configuration and of an interior dimension greater than the exterior width dimension of said bottom chord member to overlie and encompass a portion of the legs of the end of said bottom chord;

fastening means to directly secure the ends of said bottom chord to portions of said top chords and the abutting ends of said top chords;

diagonal members each being of lightweight metal having ends, and one end of said diagonal member adapting to interfit within the legs of said bottom chord member and extend upwardly at an angle to a vertical plane and the other end interfitted within the legs of one of said top chord members; and

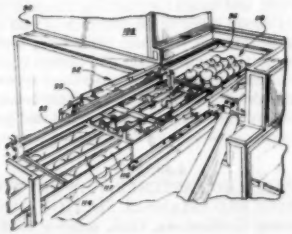
fastening means to secure the ends of said diagonal members to said bottom chord member and one of said top chord members.

4,435,941

PACKAGING MACHINE

John L. Booth, Richton Park, and Peter A. Rittmaster, Chicago, both of Ill., assignors to Booth Manufacturing Company, Vero Beach, Fla.

Continuation of Ser. No. 6,085, Jan. 25, 1979, Pat. No. 4,233,802, and a continuation-in-part of Ser. No. 876,841, Feb. 10, 1978, abandoned. This application Nov. 17, 1980, Ser. No. 207,690
The portion of the term of this patent subsequent to Nov. 18, 1997, has been disclaimed.
Int. Cl.³ B65B 5/08, 5/06
U.S. Cl. 53—475 14 Claims



1. A machine for automatically packaging articles into expanded honeycomb and into a container comprising means for locating a container at a loading station of the packaging machine to be filled and moving the container out of the loading station after it has been filled, means for providing a separator sheet into the container at the loading station, means for disposing a prescribed number of articles to be packaged as a layer in the container in a nested relationship in an article loading position, an article controlling housing assembly, means for automatically providing above said loading station a honeycomb expander tray on which is located an open honeycomb section for receiving articles and for removing the tray after the honeycomb section has been removed therefrom, means for moving the housing assembly and for lifting said articles from their article loading position, depositing them in said open honeycomb and subsequently lifting the filled honeycomb from said tray and then depositing the same in a container.

4,435,942

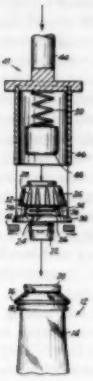
METHOD AND APPARATUS FOR STOPPERING MODIFIED BOTTLES WITH A ONE-PIECE CORKING MEANS

Efim Zaltsman, Brooklyn, N.Y., assignor to Monarch Wine Co., Inc., Brooklyn, N.Y.

Division of Ser. No. 223,894, Jan. 9, 1981, abandoned. This application Apr. 16, 1982, Ser. No. 368,990

Int. Cl.³ B67B *1/04, 3/22;* B65B *7/28*

U.S. Cl. 53—489 2 Claims



1. A method for stoppering a bottle with pressurized, carbonated, water-based liquid contents; said method comprising the steps of:

(a) providing a bottle having a body portion; an elongated neck portion; and, a mouth portion; said neck portion having two relatively axially proximate, circumferential, squat, annular flanges spaced apart longitudinally of the neck and adjacent to the mouth;

(b) providing a corking means having:

(i) an elongated, generally circularly cylindrical stopper, insertable with frictional engagement into the mouth portion of the bottle;

(ii) a head connected to the stopper;

(iii) an annular, circumferential ring, dimensioned and shaped for reception between the two annular flanges of the bottle neck; said annular ring being positioned and spaced below the head as molded and being concentric with the stopper, said ring being below the head;

(iv) a flexible, elongated tether having one end connected to the ring and the other end connected to the head; said tether being in a folded state as molded and having a length substantially greater than the distance between said one end and said other end; and

(v) a plurality of short frangible bridges, circumferentially spaced apart of each other; said frangible bridges connecting the head to the ring;

(vi) the stopper, head, ring, tether and bridges being integrally molded in one piece of elastomeric plastic;

(c) inserting the stopper portion of the corking means into the mouth portion of the bottle with a die; and

(d) thereafter forcing the annular ring portion of the corking means downwardly with a second die over the upper of the two annular flanges to a position between the two annular flanges of the bottle;

whereby the frangible bridges hold the stopper and annular ring in proper position with respect to one another for insertion and reception respectively in and around the bottle neck; said frangible bridges breaking when the annular ring is forced into place between the flanges.

4,435,943

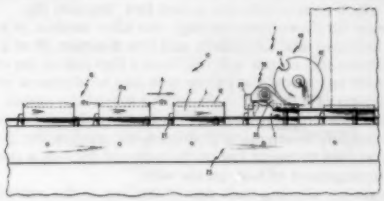
METHOD AND APPARATUS FOR FOLDING CARTON FLANGES

Sigurd J. Hoyrup, Monta Vista, Calif., assignor to Kliklok Corporation, Redwood City, Calif.

Filed Jul. 15, 1981, Ser. No. 283,553

Int. Cl.³ B65B *7/20*

U.S. Cl. 53—491 12 Claims



1. A folding apparatus for prebreaking and folding relatively short upstanding flanges formed on the upper sides of a carton or the like, comprising:

(a) conveying means for moving the carton along a predetermined guide path at a substantially uniform velocity, said carton positioned on the conveying means to define upwardly directed side, leading and trailing end flanges;

(b) first folding means including a grooved trap and inclined edge surface positioned above the guide path for engaging and partially folding down the upwardly directed side flanges of the carton, said grooved trap being positioned adjacent the inclined edge surface to engage and trap the upwardly directed free edge of said side flanges; and

(c) second folding means for contacting and completing the folding down of said prebroken flanges, said second folding means being further operable to contact and prebreak the leading end and trailing end flanges.

4,435,944

APPARATUS FOR ORDERLY TRANSPORT AND STORAGE OF FLAT OBJECTS

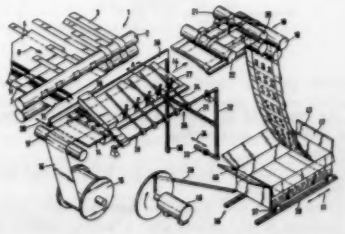
Alfons Meyer, Donauschwabenstrasse 40, D-7050 Waiblingen, Fed. Rep. of Germany

Division of Ser. No. 276,949, Jun. 24, 1981, Pat. No. 4,354,335, which is a continuation of Ser. No. 34,756, Apr. 30, 1979, abandoned. This application Jun. 18, 1982, Ser. No. 389,584

Claims priority, application Fed. Rep. of Germany, May 6, 1978, 2819887

Int. Cl.³ B65B *35/32*

U.S. Cl. 53—531 8 Claims



1. An apparatus for ordering, transporting and storing flat empty bags (4) closed at three sides and having an opening (6) at the fourth side and an extending flap (11) located adjacent said bag opening and projecting therefrom,

said bags being aligned seriatim and in overlapping position in shingled arrangement on a carrier web (15) in which the

carrier web provides for storage and delivery of the bags to a subsequent processing station,

comprising means for providing a tear or servering or fracture line (13) between the extending flap (11) and the remainder of the bag;

means for transporting the bags seriatim in a first direction (0) with their flaps extended at right angles to said first direction;

means for fixing the carrier web (15) in a direction (44) which is perpendicular to said first direction (0);

means for forwarding the bags, one after another, in predetermined time intervals in said first direction (0) at a level above said carrier web (15) from a first side of the carrier web and across the carrier web into an abutment or stop means (27) located at the second side of the carrier web;

means for dropping said bags over and on the carrier web in mutually overlapping position while guiding the drop of the then dropping bag on the web and forming a shingled arrangement of bags on the web;

means for aligning each side of the bag on the carrier web and exactly positioning the bags on the carrier web with their flaps at defined distances (A) from one another;

means for permanently and irremovably attaching said flaps of bags, as positioned and aligned onto said carrier web, seriatim at said defined distances (A) from one another to insure separation of the bag from the flap at said tear, severing or fracture line upon application of a severing force to the bag while leaving the flap attached to the web;

and means for storing said carrier web and said bags for subsequent separation of said bags from said flaps to permit subsequent filling, and separation and removal of said bags (4) from the web (15) while leaving the flaps (11) attached to the web (15).

4,435,945

APPARATUS FOR GIRDING PACKAGE WITH BONDED SYNTHETIC-RESIN STRIP

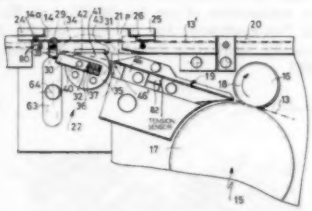
Klaus Röhrig, Wuppertal, Fed. Rep. of Germany, assignor to Berning & Sohne, Fed. Rep. of Germany

Filed Jun. 23, 1981, Ser. No. 276,661

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1980, 3023526

Int. Cl.³ B65B *13/32*

U.S. Cl. 53—589 **14 Claims**



1. An apparatus for girding a package with a bonded synthetic-resin web, comprising:

a frame;

support means on said frame for holding said package at a bonding station;

feed means on said frame for automatically encircling said package at said station with a leading portion of an elongate synthetic-resin web;

clamping means on said frame for temporarily constraining said web upon an encircling of said package by said leading portion;

cutting means on said frame at said station for severing said leading portion upon a securing of said web by said clamping means, thereby forming a web segment having a leading end and a trailing end overlappable therewith and engaging said package along at least a substantial part of a perimeter thereof, said clamping means functioning to secure at least one of said ends;

melting means on said frame at said station insertable between said ends for heating at least one of said ends on a surface facing the other end;

sealing means on said frame at said station for pressing said ends together along a clamping surface upon a heating of at least one of said ends by said melting means, said sealing means including a drum rotatably mounted on said frame, means to undirectionally rotate said drum on said frame about an axis parallel to said clamping surface, a first press element mounted on said drum, said sealing means further including a second press element disposed in the rotation path of said first press element for coacting therewith to squeeze said ends together during a bonding phase of an operating cycle, said first press element being provided with means shiftably mounting it for moving away from the other press element during said bonding phase upon contact of said elements, said sealing means further including contact-ensuring means acting on at least the shiftably mounted press element for exerting a restoring force thereon to yieldably urge such element towards the other press element during said bonding phase; and

a programmer means operatively connected to said feed means, said clamping means, said cutting means, said melting means and said sealing means for controlling and timing the operations thereof, said clamping surface being a plane defined by a face of said second press element, said second press element being mounted on said frame at a fixed distance from said axis, said contact-ensuring means comprising a restoring spring acting on said first press element, said first press element being shiftably mounted for reciprocation perpendicular to said axis, said first press element being in the form of a bar shiftably mounted along a diameter of said drum, said drum having a passage wall for said web along a longitudinal plane parallel to said axis and at an angle with respect to said bar; said cutting means including a blade attached to said drum on said passage wall, passage ahead of said first press element in the direction of rotation of said drum and traversed by said web formed between said first press bar and said blade.

4,435,946

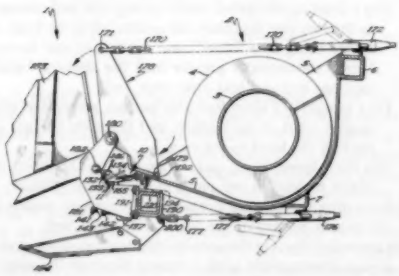
MULTI-ROW CROP HARVESTING ATTACHMENT

Leland E. Erickson, Forman, N. Dak. 58032

Division of Ser. No. 311,459, Oct. 14, 1981. This application Jan. 3, 1983, Ser. No. 455,218

Int. Cl.³ A01D *41/06, 41/12, 47/00*

U.S. Cl. 56—15.6 **7 Claims**



1. A crop harvesting attachment for use in combination with a combine having a cross auger trough and sickles and guards protruding forward of the trough, comprising:

(1) means for presenting crops to said combines sickles;

(2) frame means for supporting the weight of such crop

presenting means; said crop presenting means attached to said frame means;

(3) one or more mounting brackets, each comprising an upper section and a lower section, each mounting bracket rigidly attached to the frame means at the mounting bracket's lower section;

(4) one or more locking cams, each comprising a lower pivot section and an upper section, each of said locking cams pivotally connected to a said mounting bracket at their respective upper sections; and

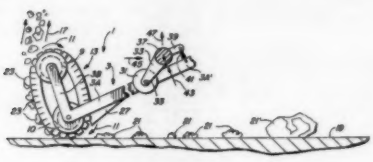
(5) means for attaching each said locking cam's upper section to the upper rear portion of said combine's cross auger trough and for fixing the distance therebetween, said upper attaching means attached to the locking cam's upper section, said distance fixed so that the point, at which each said mounting bracket is pivotally connected to each said locking cam, is approximately above the locking cam's pivot section, but slightly longitudinally forward of a vertical line running through the locking cam's lower pivot section, when said lower pivot section is in contact with and being supported by the upper front portion of said cross auger trough.

4,435,947

TOWED COTTON RETRIEVING BELT ASSEMBLY

William E. Rood, Jr., 3134 E. Fargo Cir., Mesa, Ariz. 85203

Filed Oct. 16, 1981, Ser. No. 311,984
Int. Cl.³ A01D *45/18*
U.S. Cl. 56—28 **17 Claims**



1. A cotton retrieving device comprising in combination:

(a) a retrieving belt, said retrieving belt being transversely slotted;

(b) upper pulley means for supporting said retrieving belt, said upper pulley means having a first axis;

(c) a lower pulley means for supporting said retrieving belt, said lower pulley means having a second axis parallel to said first axis;

(d) pulley support means for supporting said upper pulley means and said lower pulley means; and

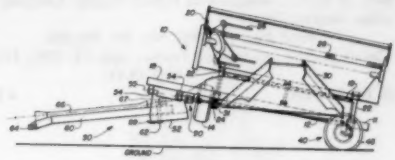
(e) towing means connected to said pulley support means for effecting towing of said pulley support means along a ground surface, said towing means having a forward portion for connection to a pulling means at a point outside of the area circumscribed by said retrieving belt and substantially in front of said retrieving belt, said towing means also having a rear portion connected to said pulley support means for towing said pulley support means and for holding said first axis and said second axis in a plane which remains approximately at a predetermined non-parallel angle with respect to said ground surface as said cotton retrieving device is towed along said ground surface.

4,435,948

MECHANISM FOR PIVOTING WINDROW SHIELDS INTO A VERTICAL TRANSPORT POSITION

Richard E. Jennings, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Sep. 30, 1982, Ser. No. 431,520
Int. Cl.³ A01B *73/00*
U.S. Cl. 56—228 **10 Claims**



1. In a crop harvesting machine convertable between a longitudinally movable operating position and a laterally movable transport position and having a draft means for connection to a prime mover for a source of motive power, said draft means including a hitch base member and a tongue pivotally connected to said hitch base member; a frame pivotally connected to said hitch base member for rotation about a pivot axis; windrow shields pivotally mounted on said frame for movement between a generally horizontally extending operative position and a generally vertically extending transport position; and power means for pivotally moving said frame and said tongue, the improvement comprising:

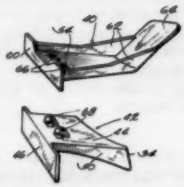
windrow shield pivot means interconnecting said hitch base member and said frame to automatically pivotally rotate said windrow forming shield from said operative position to said transport position as said frame is pivotally moved about said pivot axis.

4,435,949

MULCHING ADAPTER FOR ROTARY LAWN MOWER

Richard A. Heismann, Knoxville, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 12, 1982, Ser. No. 397,102
Int. Cl.³ A01D *53/08*
U.S. Cl. 56—320.2 **14 Claims**



1. A lawn mower comprising a blade housing having a generally circular interior surface and having a grass discharge chute includng a discharge outlet through which cut grass is adapted to be discharged, at least one wheel for supporting said blade housing for movement along the ground, a cutting blade supported in said blade housing, a prime mover supported by said blade housing and connected to said blade for causing rotation of said blade about a generally vertical axis, and a grass mulcher insertable through said discharge outlet into said discharge chute for blocking said discharge chute to prevent cut grass from passing through said discharge chute, said mulcher comprising an inner portion including a substantially vertical surface curved about said generally vertical axis, spaced from but adjacent the path of said cutting blade, and forming a generally continuous surface with said blade housing interior surface, said inner portion of said mulcher also including an upper surface sloping upwardly and inwardly with

respect to said generally vertical axis so as to deflect downwardly and toward said cutting blade moving pieces of grass, cut by said cutting blade and striking said upper surface.

4,435,950

FRUIT OR BERRY HARVESTING DEVICE FOR IN-LINE CROPS

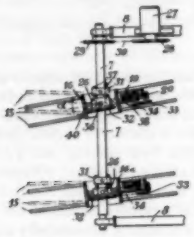
Alain Deux, Angers, and Jean C. Merant, Doue La Fontaine, both of France, assignors to Braud, Societe Anonyme Francaise, Angers, France

Filed Aug. 17, 1982, Ser. No. 408,889

Claims priority, application France, Aug. 31, 1981, 81 16564

Int. Cl.³ A01D *46/00*

U.S. Cl. 56—330 **4 Claims**



1. A machine for harvesting fruits and berries by dislodgment for in-line crops, by vibration of the vegetation, comprising pairs of "hedgehog" drums with vertical axes, arms supporting said axes free to pivot with resilient return about fixed axes of the machine, angularly adjustable hubs fixed on said axes of the drums inclined by at an angle with respect to said axes of the drums, sleeves mounted freely rotatable about said hubs and inclined by the same angle, flexible fingers fixed radially to said sleeves, eccentric fly-weights free to rotate about axes carried by arms extending radially from the sleeves, means for controlling the speed of rotation of the axes of the drums and of a chain and gear wheel transmission coupling the axes of the drums to the axes of the fly-weights, the rotation of the axes of the drums causing a sinusoidal vibration of the fingers in a vertical plane passing through said axes of the drums, which vibration is adjustable from zero to its maximum by variation of the speed of rotation of said axes and by variation of the angle of inclination of the hubs, which vertical vibration is compounded by the adjustable horizontal vibration due to the fly-weights, the horizontal vibration being adjustable by varying at least one of the weight, eccentricity and speed of the fly-weights.

4,435,951

GARDENING DEVICE

Jürgen Dambroth, Barsinghausen, Fed. Rep. of Germany, assignor to Firma Rux GmbH, Barsinghausen, Fed. Rep. of Germany

Filed Jul. 2, 1981, Ser. No. 279,903

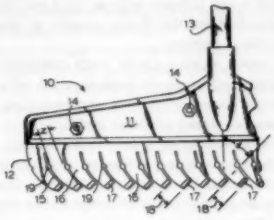
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1980, 3025029

Int. Cl.³ A01B *1/24*

U.S. Cl. 56—400.05 **14 Claims**

1. A multi-purpose gardening tool for operating on grass faces which is securable to an elongated handle, comprising:

an operating device having an elongated support portion which is securable to an elongated handle and which has a longitudinal axis oriented in a generally perpendicular disposition relative to the axis of said handle and a tool portion composed of a plurality of tongues separated by channel-like cut-outs, the free ends of which define cutting-like linear faces all of which faces are parallel to each other and are directed to the grass face to be worked on and are disposed at an angle (α) with respect to a plane passing through the axis of the handle and the normal movement direction of the handle, said linear tongue faces



also being generally arranged at an angle to a plane passing through said handle axis and said support portion axis.

4,435,952

SPINNING ASSEMBLY FOR A WRAPPED YARN SPINNING MACHINE

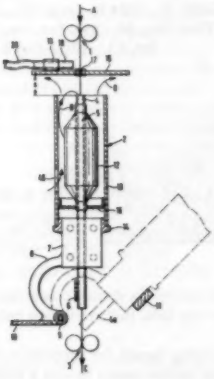
Fritz Stahlecker, Josef-Neidhart-Str. 18, 7347 Bad Überkingen, Fed. Rep. of Germany; Kurt Lang, Lauterstein, and Rolf Erhardt, Wäschenbeuren, both of Fed. Rep. of Germany, assignors to Fritz Stahlecker and Hans Stahlecker, both of, Fed. Rep. of Germany

Filed Dec. 21, 1981, Ser. No. 332,760

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1981, 3101146

Int. Cl.³ D02G *3/36;* **D01H** *7/18, 11/00*

U.S. Cl. 57—18 **20 Claims**



1. A spinning assembly for a wrapped yarn spinning machine comprising a hollow spindle carrying a co-rotating binding thread and disposed between delivery means for a sliver to be wrapped and a take-off means for the wrapped yarn, said binding thread moving toward the sliver to be wrapped thereby during rotation of said spindle, said spindle being surrounded in the vicinity of the binding thread with a stationary balloon limiter means, a relatively stationary screen plate means located between the delivery means and the balloon limiter means, said screen plate means being provided with a passage for sliver and being disposed at an axial distance from the balloon limiter means so that an airflow is able to take place in the balloon limiter means which airflow leaves the balloon limiter means in a generally radially outward direction and thus generally opposite the direction of movement of the binding thread to thereby prevent fly accumulation on the binding thread.

4,435,953

OPENING ROLLER UNIT FOR OPEN-END SPINNING INSTALLATIONS

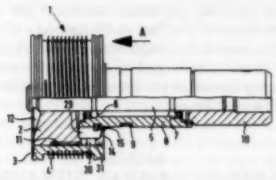
Friedbert Schmid, Bad Überkingen, and Hans Raasch, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to Fritz Stahlecker, Uberkingen and Hans Stahlecker, Sussen, both of, Fed. Rep. of Germany

Filed Jun. 14, 1982, Ser. No. 388,219

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1981, 3123480

Int. Cl.³ D01H *7/895, 7/892;* D01G *15/28*

U.S. Cl. 57—408 18 Claims



1. Opening roller unit for open-end spinning installations having a shaft supported in a bearing box, and an opening roller being arranged on an end of the shaft which projects from the bearing box for rotation with said shaft, the opening roller extending over the bearing box in a manner forming a cavity that is sealed toward the outside with an annular sealing gap, wherein the opening roller comprises a base member and a ring detachably secured thereto, the outer periphery of said ring being provided with a fitting, and wherein external access to said cavity is blocked by said ring.

4,435,954

FIBER OPENING DEVICE IN OPEN-END SPINNING UNIT

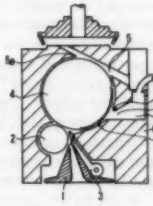
Kazuo Seiki, Kariya; Kozo Motobayashi, Aichi; Toshio Yoshizawa, Chiryu; Yoshiaki Yoshida, and Keiji Onoue, both of Toyota, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Dec. 22, 1981, Ser. No. 333,443

Claims priority, application Japan, Dec. 27, 1980, 55-185105

Int. Cl.³ D01H *7/882, 7/892*

U.S. Cl. 57—408 6 Claims



1. A fiber opening device for use in an open-end spinning unit, comprising a generally hollow cylindrical casing having a rotatable combing roller mounted therein, said casing having a fiber inlet port, a trash exit port, and a fiber feeding channel port through which a stream of opened fibers is discharged from said casing responsive to rotation of said combing roller, said ports being disposed in tandem spaced-apart relation along the interior periphery of said casing, and each of said ports providing an upstream edge and a downstream edge of the port respectively extending substantially across said interior periphery, and an elongated edging member of wear-resistant material attached to at least one of said port edges and substantially extending only along the length thereof.

4,435,955

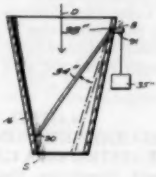
METHOD AND APPARATUS FOR PRODUCING OPEN-END-SPUN NOVELTY YARNS

John H. Sumner, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 127,446, Mar. 5, 1980, Pat. No. 4,361,007. This application Sep. 3, 1982, Ser. No. 414,576

Int. Cl.³ D01H *1/12, 7/882, 7/892;* D02G *3/34*

U.S. Cl. 57—409 15 Claims



1. A method of open-end spinning a novelty yarn in an open-end spinning apparatus having a fiber separating device, a twisting device, an elongated thin member, and a fiber transport section interconnecting the separating and twisting devices, said method comprising the steps of: effecting controlled formation of effects in the fiber transport section by effecting controlled reciprocating introduction of the elongated member into the fiber flow within the transport section so that it at all times makes an angle of less than about 45° with respect to the direction of fiber flow; and intermittently passing those effects to the twisting device by reciprocally withdrawing the elongated member from the fiber flow so that it at all times makes an angle of less than about 45°.

5. Apparatus for spinning novelty yarn comprising an open-end spinning device including:

a fiber separating device;

a twisting device;

a fiber transport section disposed between said separating and twisting devices, said fiber transport section comprising a tubular member defined by a wall, and through which the fiber flows in a predetermined direction from the fiber separating device to the twisting device; and

means for effecting controlled formation of effects in the transport section and for occasionally passing the formed effects to the twisting device, said means comprising: an elongated member having a length long enough to extend from one side of said tubular member wall to another portion of said tubular member wall; and means for pivotally mounting, for pivotal movement about an axis, said elongated member at a first side of said tubular member wall so that said elongated member has a free end extending angularly from said first side of said tubular member wall generally in the predetermined direction of fiber flow, and so that it is moveable from a collecting position wherein said free end thereof engages, or substantially engages, another side of said tubular member wall to collect effects between said free end and said wall, to a

release position wherein said free end is spaced from said tubular member wall.

4,435,956

BRACELET

Usher Meyman, 230 Ocean Pkwy., E3, Brooklyn, N.Y. 11218

Filed Nov. 12, 1981, Ser. No. 320,420

Int. Cl.³ F16G *13/00*

U.S. Cl. 59—79.1 **6 Claims**

1. A bracelet, comprising

two spring elements arranged in two rows extending in direction of elongation; and

a plurality of connecting elements arranged in overlapping relationship and connecting said spring elements in a direction which is transverse to said direction of elongation and fixedly connected with said spring elements.

4,435,957

DEVICE TO REGULATE THE FLOW RATE OF A LIQUID FUEL SUPPLY SYSTEM OF A GAS TURBINE ENGINE

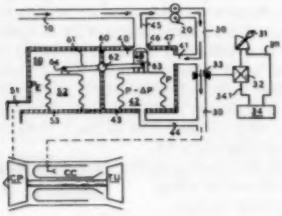
Jean-Luc Fondacci, Montgeron, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.), France

Filed Jan. 8, 1982, Ser. No. 338,093

Claims priority, application France, Jan. 19, 1981, 81 00853

Int. Cl.³ F02C *9/28*

U.S. Cl. 60—39.281 **3 Claims**



1. Flow control device for a liquid fuel supply system of a gas turbine engine equipped with an air compressor, said fuel supply system being of the type comprising a volumetric fuel pump, an intake line delivering the fuel from a reservoir to the pump, a supply line directing the fuel discharged by the pump to the combustion chamber of the engine, a principal flow regulator element in the supply line, means to assign specific values to the passage cross section of said principal regulator element and a fuel return circuit connecting the supply line upstream from the principal regulator with the intake line, wherein said flow control device is an auxiliary regulator comprising:

a tight enclosure divided into a first chamber and a second chamber by a tight, transverse separating partition, the first chamber being in the return circuit of the fuel and also containing a fuel inlet orifice and a fuel outlet orifice; means connecting the second chamber with a selected stage of the compressor;

a first bellows longitudinally deformable and located in the first chamber, fastened by one of its ends to a wall of the enclosure opposite the fuel outlet orifice, its interior being in communication with the supply line downstream from the principal regulator and carrying on its free end a valve tending to close the fuel outlet orifice when said bellows expands;

a second bellows, longitudinally deformable and containing no air, located in the second chamber wherein it is attached by one of its ends to the same wall of the enclosure as the first bellows; and,

a lever passing through the partition to which it is attached by means of a tight articulated joint and having its free ends attached to the two bellows by articulated joints such that the auxiliary regulator maintains the value of the pressure drop of the fuel at the passage of the principal regulator essentially proportional to the value of the pressure of the air discharged by the compressor through the connecting means, as the principal regulator varies within predetermined limits.

4,435,958

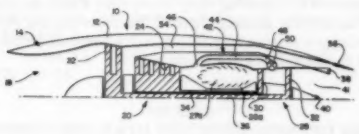
TURBINE BYPASS TURBOFAN WITH MID-TURBINE REINGESTION AND METHOD OF OPERATING THE SAME

Garry W. Klees, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 29, 1981, Ser. No. 306,650

Int. Cl.³ F02K *3/06*

U.S. Cl. 60—204 **24 Claims**



14. In a supersonic jet engine adapted to cruise at supersonic speeds at a relatively high efficiency, to operate with high turbine inlet temperatures for high power operation, and to cruise subsonically with a relatively low specific fuel consumption, said engine comprising:

a. a housing structure having an upstream inlet end to receive intake air, and a downstream exhaust end to discharge jet exhaust,

b. an air inlet arranged to receive intake air at subsonic velocity and also to receive intake air at supersonic velocities and reduce said air to subsonic velocity,

c. a compressor mounted in said housing rearwardly of said inlet and arranged to compress air flowing into said inlet, said compressor having a first compressor fan section and a second compressor section, each having an inlet end and an outlet end arranged to operate between a maximum compression ratio and a minimum compression ratio,

d. means defining a fan duct positioned rearwardly of said fan section,

e. means defining a combustion chamber mounted in said housing downstream of said compressor to receive compressed air therefrom,

f. fuel injection and ignition means in said combustion chamber arranged to burn fuel in airflow from the compressor and provide a gaseous flow from said combustion chamber,

g. a turbine mounted in said housing rearwardly of said combustion chamber and arranged to receive said gaseous flow from the combustion chamber, said turbine having a first stage operatively connected to the compressor second section, and a second stage operatively connected to the compressor first section adapted to receive gaseous flow from said first stage, each of said first and second turbine stage having a predetermined cross-sectional noz-

zle area through which said gaseous flow passes to pass rearwardly through a primary exhaust passageway,

h. an exhaust nozzle to receive gaseous flow from said turbine and exhaust said flow to produce a thrust,

i. turbine bypass means to receive flow from a location downstream of said compressor as bypass flow, to direct said bypass flow along a path bypassing said turbine first stage and exhaust said bypass flow to pass through said turbine second stage,

j. bypass valve means to control the amount of flow bypassed through said turbine bypass means,

k. engine control means operatively connected to said fuel injection and ignition means and to said bypass valve means, in a manner to control the amount of fuel directed to said fuel injection and ignition means and to control said bypass valve means in a manner to control the amount of bypass flow through said turbine bypass means,

a method of operating said jet engine, said method comprising: controlling the amount of fuel directed to said fuel injection and ignition means and controlling said bypass valve means in a manner to control the amount of bypass flow through said turbine bypass means so that said bypass valve means is at a more open position at higher engine thrust settings where higher temperatures are created in said combustion chamber, and at a more closed position at lower engine thrust settings where lower temperatures are created in said combustion chamber, in a manner that there is substantially constant corrected gaseous flow into said turbine, and said bypass flow is directed through said turbine second stage, said corrected flow being measured according to the formula:

$$\text{corrected gaseous flow} = W\sqrt{\theta_t/\delta_t}$$

where:

W = Total Mass Flow Rate in lbs. per second

θ_t = Observed temperature (absolute) divided by standard temperature (518.67° R)

δ_t = Observed pressure divided by standard pressure (2116.22 lbs./sq. ft.) whereby during subsonic cruise said engine can operate at a relatively low specific fuel consumption with high compression ratio and low combustion exit temperature, in a condition where said valve bypass means is at a substantially closed position, during high power acceleration mode, said engine can operate at high combustion exit temperatures in a condition where said valve bypass means is in a more open position to maintain constant corrected flow through said turbine to satisfy the turbine requirements, and during supersonic cruise mode the engine can operate efficiently at relatively high combustion exit temperatures.

4,435,959

HOT-GAS PISTON-TYPE ENGINE AND USE THEREOF IN HEATING, COOLING AND POWER PLANTS

Ernst Mohr, Murten, Switzerland, assignor to Fides Treuhand GmbH, Wuppertal, Fed. Rep. of Germany

Filed Jun. 22, 1981, Ser. No. 275,787

Claims priority, application European Pat. Off., Jul. 1, 1980, 80810217

Int. Cl.³ F01B *29/08*

U.S. Cl. 60—512 **28 Claims**

1. A hot-gas piston-type engine comprising

at least one cylinder having a first wall portion defining a first compression space and a second wall portion defining a second compression space, said second compression space being in fluid communication with said first compression space;

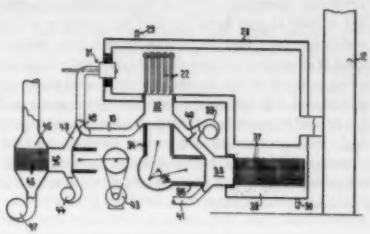
a reciprocable piston disposed in said first compression space for reciprocating movement therein and for contact with compressible fluid in said first compression space;

crank means connected to said piston for converting reciprocating piston motion to rotational motion;

inlet means for intake of fluid into said cylinder;

outlet means for exhaust of fluid from said cylinder; and

heat exchanger means for contact with a heat transfer medium, said heat exchanger means comprising said second compression space and said second wall portion of said cylinder, said second compression space being empty



during operation of the engine except for the presence of compressible fluid communicated into said second compression space from said first compression space.

4,435,960

HYDRAULIC POWER BOOSTERS FOR VEHICLE HYDRAULIC SYSTEMS

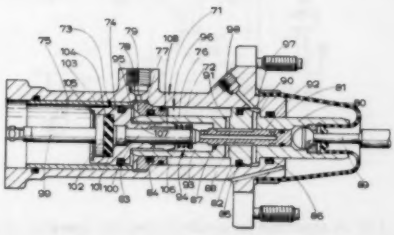
Glyn P. R. Farr, Warwickshire, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Dec. 30, 1980, Ser. No. 221,260

Claims priority, application United Kingdom, Jan. 3, 1980, 8000200; Feb. 20, 1980, 8005727

Int. Cl.³ B60T *13/00*

U.S. Cl. 60—547.1 **6 Claims**



1. A pedal-operated hydraulic power booster for a vehicle hydraulic system comprising a pedal, a housing having an inlet port for connection to a source of hydraulic fluid under pressure, an exhaust port for connection to a reservoir for hydraulic fluid, a stepped bore having axially spaced first, second and third portions, said first and second portions being of different diameter, a boost piston of stepped outline for actuating a master cylinder assembly, said boost piston having first, second and third portions of at last two different diameters working in said first, second and third portions of said bore respectively, said second portion of said piston being of smallest diameter, and said first and third portions of said piston being arranged at opposite ends of said second portion of said piston, a seal carried by said first portion of said piston for slidable sealing engagement with said first portion of said bore, a seal in said housing located in said second portion of said bore and in which said second portion of said piston has a slidable sealing engagement, a seal carried by said third portion of said piston for slidable sealing engagement in said third portion of said bore, said first portions being disposed closer than said second portions to said pedal, means defining in said housing a first high pressure chamber through which hydraulic fluid is applied to said boost piston, means defining in said housing a second high pressure chamber communicating with said inlet port, means defining in said housing a reservoir chamber communicating with said exhaust port, and a control valve opera-

ble in response to an effort applied to said pedal for controlling communication between said first and second high pressure chambers and between said first high pressure chamber and said reservoir chamber, said first high pressure chamber being defined at least in part between said first portion of said piston and a shoulder at a first step between said first portion of said bore and said second portion of said bore, said reservoir chamber being defined at last in part between said third portion of said piston and a shoulder at a second step between said second portion of said bore and said third portion of said bore in which the said third portion of said piston works, and said second high pressure chamber being defined between said second portion of said piston and the end of said bore which is remote from said master cylinder.

4,435,961

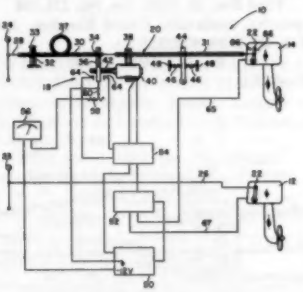
METHOD AND APPARATUS FOR AUTOMATICALLY SYNCHRONIZING MULTIPLE ENGINES

Glenn D. Stewart, 210 Bayview Ave., Massapequa, N.Y. 11758

Filed Dec. 19, 1980, Ser. No. 218,063

Int. Cl.³ F02B *73/00*

U.S. Cl. 60—719 **16 Claims**



1. In an apparatus for synchronizing the operation of at least a slave engine with that of a master engine,

manual and engine throttles movably connected with and for adjusting the operation of each of said engines,

servo means operable to adjust said slave engine throttle to synchronize it with the operation of said master engine throttle when the master and slave engines operate asynchronously,

and means connecting said slave engine throttle with its respective manual throttle including operable means connecting said slave engine manual throttle with said slave engine throttle for operation of said slave engine throttle directly in response to the operation of said respective manual throttle and moving means releasably moving said operable means and connected with and between said servo means and said operable means to move to adjust said operable means and said slave engine throttle in response to the operation of said servo means,

and resiliently yieldable means connected between said moving means and said servo means and applying a predetermined resistance to the movement of said moving means in response to the operation of said slave engine manual throttle until the force applied by said slave engine manual throttle exceeds said predetermined force thereby enabling said slave engine and its throttle to be independently manually overcontrolled and adjusted by the movement of its respective manual throttle without the application of anything more.

4,435,962

REFRIGERATING APPARATUS

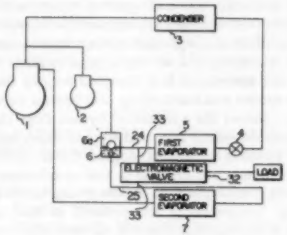
Taketoshi Mochizuki, Shimizu; Kazuya Matsuo, Ibaraki; Mituo Kudo, Shimizu; Akira Arai, Ibaraki; Junichi Yamada, Itami; Keizi Shono, Toyonaka; Masaaki Aoki, Amagasaki; Masaichi Ohmori, Hachioji, and Genichiro Nishi, Sagamihara, all of Japan, assignors to Shin Meiwa Industry Co., Ltd. and Hitachi, Ltd., both of Tokyo, Japan

Filed Jun. 22, 1981, Ser. No. 276,192

Claims priority, application Japan, Jun. 20, 1980, 55-82871

Int. Cl.³ F25B *7/00, 41/00*

U.S. Cl. 62—175 **4 Claims**



1. A refrigerating apparatus comprising a closed refrigerant circuit including a first compressor, a condenser, a first pressure reducing means, a first evaporator, a second pressure reducing means and a second evaporator connected together through lines in the indicated order, said first evaporator is located in a cooling air passage on an upstream side thereof with respect to a direction of an air current flowing through said air passage, said second evaporator is located in the cooling air passage on a downstream side thereof, and

a second compressor connected to said refrigerant circuit so that gaseous components of refrigerant in the line between an outlet of the first evaporator and the second pressure reducing means is lead to a suction side of the second compressor, a discharge line of the second compressor is in communication with a discharge line of said first compressor.

4,435,963

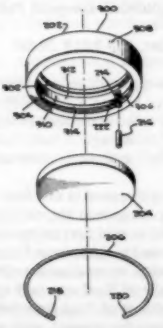
MEANS FOR RETAINING JEWELERY FOR INTERLOCKING WITH PRECISE PREFORMS

Jhono Shigeru, Los Angeles, Calif., assignor to Tempo G, Los Angeles, Calif.

Continuation-in-part of Ser. No. 146,488, May 5, 1980, Pat. No. 4,283,831. This application Apr. 28, 1981, Ser. No. 258,287

Int. Cl.³ A44C *15/00*; **B65D** *45/32*

U.S. Cl. 63—18 **49 Claims**



1. A cast frame characterized by an upper face having a

large central hole for exposing an object, a lower face having a large central hole, an inner transverse circumferential wall containing a transverse critical dimension inner wall portion adjacent the upper face, the circumference of the critical dimension inner wall being only slightly larger than the corresponding circumference of the object to be retained within it, and an annular groove in the inner transverse circumferential wall and beneath the critical dimension inner wall, whereby the improvement is an anti-rotation means for preventing rotational movement of different objects of a circular configuration and approximately the same size in the cast frame, the anti-rotation means comprising:

a. a notch in said inner transverse circumferential wall and extending into said critical dimension inner wall;

b. an anti-rotation pin placed into said notch such that the pin extends into the area of the critical dimension inner wall but does not extend into said annular groove; and

c. said anti-rotation pin having a press fit between the object and said notch.

4,435,964

AUTOMATIC WASHING MACHINE FOR SHOES

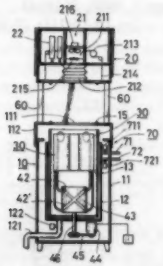
Nobuo Misawa, 2749 Kawajiri, Shiroyamacho Tsukuigun Kanagawaken, Japan

Filed Aug. 4, 1982, Ser. No. 405,150

Claims priority, application Japan, Aug. 27, 1981, 56-134701; Feb. 19, 1982, 57-25765; May 24, 1982, 57-86668

Int. Cl.³ D06F *9/00, 25/00*

U.S. Cl. 68—19.2 **13 Claims**



1. An automatic washing machine for shoes comprising

(a) a water tub having an open upper side,

(b) a dehydrating tub which is rotatably disposed in said water tub,

(c) an external shell which houses said water tub,

(d) a head section which is provided above said external shell and vertically moves to open and close the opening of said water tub,

(e) a water supplying and discharging means which supplies water into and discharges it from said water tub,

(f) at least two brushing sections which are arranged adjacent each other in said dehydrating tub, each brushing section having an inner brush which is made so that a shoe may be mounted thereon and an outer brush which is arranged to surround said inner brush so that said outer brush comes in contact with the external surface of said shoe mounted on said inner brush,

(g) a drying means which is provided on said head section to supply air for drying into said water tub,

(h) a driving means for rotating said dehydrating tub at a high speed,

(i) a driving means for alternately moving up and down the inner and outer brushes of said brushing section in two different directions,

(j) a driving means for vertically moving said head section, and

(k) a control means for controlling the driving means for said dehydrating tub, the driving means for said brushing sections, the driving means for said head section and said water supplying and discharging means,

wherein an automatic washing operation for shoes is carried out in sequence through a first stage for covering and closing said water tub by moving down said head section by said control means after shoes have been mounted on said inner brushes of the brushing sections, a second stage for supplying water for washing into said water tub, a third stage for brushing the shoes by said brushing sections, a fourth stage for discharging water for washing from said water tub and supplying water for cleansing into the water tub, a fifth stage for discharging water for cleansing, a sixth stage for centrifugally dehydrating water from the shoes by rotating said dehydrating tub and said brushing sections, a seventh stage for supplying air for drying from said drying means into said dehydrating tub after dehydration, and an eighth stage for moving up said head section to expose said brushing sections.

4,435,965

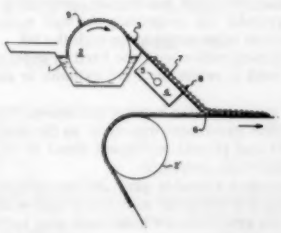
APPARATUS FOR TREATING A POROUS, ABSORBENT MATERIAL WITH A FOAMABLE CHEMICAL COMPOSITION

Sasseville, Roland E.; Joseph S. Chappell, and Daniel J. Corcoran, Jr., all of Greensboro, N.C., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 246,320, Mar. 23, 1981, abandoned. This application Jan. 7, 1982, Ser. No. 337,856

Int. Cl.³ D06B *1/06*

U.S. Cl. 68—205 R **3 Claims**



1. An apparatus for treating a porous, absorbent material with a liquid, foamable chemical composition containing a modifying compound with which it is desired to treat the material, which chemical composition is capable of being formed by forcing a gas through the chemical composition, said apparatus comprising:

a container for containing the foamable chemical composition;

rotatable roll means positioned at least partially in said container for transferring the foamable chemical composition out of said container;

a doctor blade having a receiving end adjacent the periphery of said roll means for receiving the foamable chemical composition from said roll means, a discharge end below said receiving end for discharging foam onto the material to be treated, and an intermediate porous portion between said receiving and discharge ends and extending across the doctor blade;

a gas chamber having an inlet for introducing the gas into said gas chamber, said gas chamber being positioned beneath said doctor blade and having an opening therein opening against said porous portion for directing the gas from said gas chamber through said porous portion; and

material feed means for feeding the material to be treated past said discharge end of said doctor blade;

whereby the foamable chemical composition is transported by gravity over said receiving end of said doctor blade, thence over said porous portion to cause foaming of the

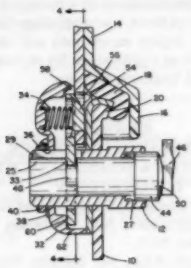
foamable chemical composition by means of gas being expelled from said gas chamber through said porous portion, and thence over said discharge end of said doctor blade and onto the material to be treated.

4,435,966

MOTORCYCLE SADDLE BAG LOCK

Clark E. Craig, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.

Filed May 7, 1982, Ser. No. 376,182
Int. Cl.³ B65D *55/14*; E05C *5/00*
U.S. Cl. 70—161 **5 Claims**



1. A latch and lock mechanism for use in combination with an open container of the type having a lid cooperating with the open container, said lock mechanism comprising:

a fixed cylinder for projecting through a container wall adjacent an edge cooperative with the lid;

a housing cooperative with the fixed cylinder on the inside of the wall to retain the fixed cylinder in position in the wall;

a shutter mounted in the housing and retained by the housing for limited movement transverse to the axis of the fixed cylinder and pivotal movement about an axis parallel to the edge of the container;

a key actuated rotatable plug in the cylinder, said plug mounted for rotatable movement and axial movement along the axis of the cylinder, said plug including means engaging the shutter for driving the shutter transversely in response to rotatable movement and pivotally in response to axial movement;

biasing means for biasing the shutter about the pivotal axis;

a strike on the lid for receiving the shutter and retaining the shutter; and

said housing including a land cooperative with the shutter only when the shutter is shifted to a maximum transversely position toward the edge to thereby prevent pivotal movement of the shutter and release of the shutter from the strike.

4,435,967

DOORKNOB

Walter E. Best, and William R. Foshee, both of Indianapolis, Ind., assignors to Best Lock Corporation, Indianapolis, Ind.

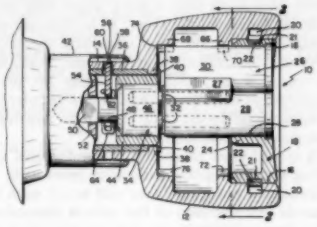
Continuation-in-part of Ser. No. 270,825, Jun. 5, 1981, Pat. No. 4,394,821, which is a continuation-in-part of Ser. No. 136,746, Apr. 2, 1980, abandoned. This application Mar. 25, 1982, Ser. No. 361,989
Int. Cl.³ E05B *63/10*
U.S. Cl. 70—224 **10 Claims**

1. A doorknob, comprising

a body having a hand-hold portion and a neck, and mountable in a predetermined orientation on a knob sleeve or the like,

said hand-hold portion being hollow and having a large circular end face opening,

a face plate rotatably mounted in said opening and defining within itself an unsymmetrical opening adapted to removably receive a key-operable lock core,



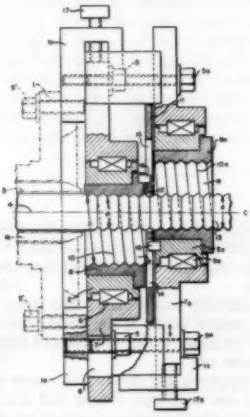
said knob being formed axially inward of said face plate with a notch in position to be engaged by an eccentric portion of a lock core mounted in said face plate so as to key the face plate and knob against relative rotation.

4,435,968

APPARATUS FOR CORRUGATING PIPES

Harald Roderburg, Langenhagen, Fed. Rep. of Germany, assignor to Kabel-und Metallwerke Gutehoffnungshütte Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jul. 13, 1981, Ser. No. 282,619
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1980, 3029447; Aug. 2, 1980, 3029448
Int. Cl.³ B21D *15/04*
U.S. Cl. 72—77 **18 Claims**



1. In an apparatus for the corrugation of tube of plastically deformable material through which the tube is continuously passed in a direction of passage, comprising a corrugator rolling bushing having an inside surface formed with a deformation rib which is helical (when annular parallel corrugations are to be produced on the tube) of more than one thread, or, respectively, with at least one deformation rib acting on successive points viewed in the longitudinal direction of the tube (when helical corrugations are to be produced in the tube), said corrugator rolling bushing being supported for free rotation in a rotatable corrugator head, the inside diameter of the corrugator rolling bushing being larger than the diameter of the tube to be corrugated and the corrugator rolling bushing being supported eccentrically to the tube, the improvement wherein

the ratio of the inner diameter of the inside diameter defined

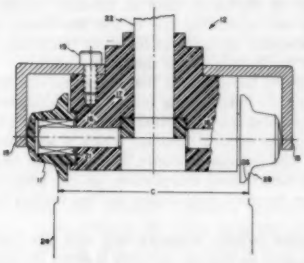
by the deformation rib to the outside diameter of the corrugated tube in the region of a corrugation valley thereof is n:1 where n is an even integer, with a maximum deviation of 5%.

4,435,969

SPIN-FLANGER FOR BEVERAGE CONTAINERS

C. Ross Nichols, Golden, and Edward C. Miller, Broomfield, both of Colo., assignors to Ball Corporation, Muncie, Ind.

Filed Jun. 2, 1981, Ser. No. 269,446
Int. Cl.³ B21D *19/12*
U.S. Cl. 72—126 **11 Claims**



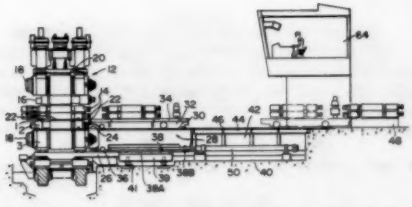
1. A roller for flanging canbodies comprising:
an annular arcuate forming surface;
a first frustoconical slack-removing and supporting surface integrally connected to said arcuate forming surface and forming an outside angle of from about 60° to about 70° with respect to the central axis of the rotor; and
an annular curved surface with a radius of less than about 0.300 inches and greater than about 0.060 inches for providing clearance of the canbody, said annular curved surface being integrally connected to said first frustoconical surface.

4,435,970

ROLL CHANGING DEVICE FOR ROLLING MILL

Teruo Sekiya, Takahagi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 10, 1981, Ser. No. 272,283
Claims priority, application Japan, Jun. 18, 1980, 55-81423
Int. Cl.³ B21B *31/10*
U.S. Cl. 72—239 **8 Claims**



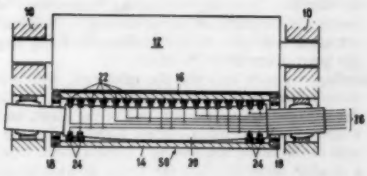
1. A roll changing device for rolling mills, comprising:
a mill stand having a housing, and upper and lower roll sets constituting a pair, each including a work roll, an intermediate roll and a back up roll with said intermediate roll disposed between said work roll and said back up roll;
work roll changing rails and intermediate roll changing rails spaced vertically from said work roll changing rails, respectively, and adapted for mounting said work rolls and said intermediate rolls during the roll change;
said roll changing rails being disposed in said housing;
a stationary floor being provided at the front side of said rolling mill at a fixed distance from said rolling mill and having rails mounted thereon;
delivery rails disposed between said rolling mill and said stationary floor, and adapted to deliver and receive said rolls to and from said roll changing rails;
a vertically movable floor device provided between said rolling mill and said stationary floor, said floor device having rails;
a roll changing truck carrying said delivery rails mounted thereon and movably mounted on said rails of said vertically movable floor device; said work and intermediate roll changing rails being common in size with and parallel to said delivery rails, and said rails on said stationary floor being common in size with and parallel to said floor device rails; and
said vertically movable floor device being vertically movable respectively to a first position where said delivery rails on said roll changing truck join and align with said work roll changing rails, to a second position where said delivery rails join and align with said intermediate roll changing rails, and to a third position where said floor device rails join and align with said rails on said stationary floor.

4,435,971

CONTROLLED DEFLECTION ROLL WITH CONTROL ARRANGEMENT

Wolfgang Schuwerk, Kisslegg, Fed. Rep. of Germany, assignor to Escher Wyss Aktiengesellschaft, Zurich, Switzerland

Filed Dec. 28, 1981, Ser. No. 334,644
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1981, 3101115
Int. Cl.³ B21B *29/00*
U.S. Cl. 72—243 **3 Claims**



1. A controlled deflection roll intended to cooperate with a counter roll, comprising:
a roll shell having opposed end regions;
a roll support having opposed end regions;
a plurality of support elements interposed between said roll shell and said roll support for supporting said roll shell upon said roll support;
predetermined ones of said support elements being arranged in respective commonly controlled groups;
at least one of said commonly controlled groups of support elements containing at least two support elements effective in opposite directions;
said at least two support elements which are effective in opposite directions of said one commonly controlled group of support elements being arranged at one of the end regions of said roll support and said roll shell;
said at least two support elements which are effective in opposite directions being spaced from one another in order to exert a bending moment at said one end region of said roll shell in order to counteract edge compression between the controlled deflection roll and the counter roll;
one of said at least two oppositely effective support elements being located closer to an outer edge of said one end region of the roll shell than the other support element; and

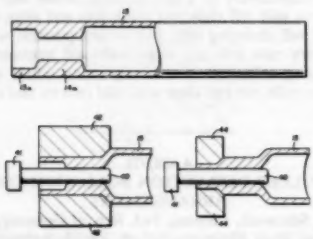
a common supply line for applying essentially the same pressure force to said at least two support elements which are effective in opposite directions, so that the forces applied by said two support elements essentially compensate one another, but by virtue of the different mutual spacing of said two oppositely effective support elements from said outer end of the roll shell there is applied a bending moment to the roll shell counteracting edge compression.

4,435,972

PROCESS FOR FORMING INTEGRAL SPINDLE-AXLE TUBES

Joseph A. Simon, 17755 Masonic Blvd., Fraser, Mich. 48026

Filed Jun. 28, 1982, Ser. No. 393,032
Int. Cl.³ B21C *25/08, 37/16*
U.S. Cl. 72—256 **6 Claims**



1. A process for extruding an integral spindle and axle tube, comprising the steps of:

positioning a relatively short, tubular blank within an open ended, tubular die having an inlet end through which the blank is inserted and an opposite extrusion end formed by an annular, inwardly extending, continuous shoulder forming a die extrusion throat through which the blank is extruded, and with the throat diameter being larger than the inner diameter of the blank;

inserting a punch into the die inlet end, with the punch closely fitted within the die and having an annular shoulder engaged against the free end of the blank, and having a first punch extension closely fitted within the interior wall of the blank, and having a second punch extension of a smaller diameter than the blank interior diameter extended through part of the blank and die throat, and having a third punch extension, which is formed on the punch co-axial with and extending from the second punch extension, but of a smaller diameter than the second punch extension, with the punch shoulder and punch extensions being located co-axially with each other and also with the blank and die throat, and with the second punch extension being located between the first and third punch extensions;

next moving the punch towards the die throat so that the punch shoulder rams the blank towards the die throat, and simultaneously aligns its second punch extension within the die throat to thereby extrude the lead end of the blank through the annular space between said second punch extension and the die throat to thereby form one thickened end of the metal tube;

continuing moving the punch so that the first punch extension aligns with the die throat to thereby extrude the blank through the annular space between the first punch extension and the throat to form a relatively thin wall metal tube middle portion;

then removing the punch from the die, and inserting a second tubular blank within the die in full end to end contact with the trailing end of the partially extruded blank;

reinserting the punch in the die with its punch shoulder engaging the trailing end of the second blank, and with the punch first extension closely fitted within the second blank, so that the punch second extension is aligned with but spaced from the die throat, and the third punch extension is positioned within the die throat;

moving the punch in the direction of the die throat to extrude a portion of the first, partially extruded, blank through the annular space between the die throat and third punch extension to form a relatively thick ring section adjacent the trailing end of the partially extruded blank, and thereafter proceeding with the step of moving the punch so that the second punch extension moves within the die throat and the second blank pushes the remainder of the first, partially extruded, blank through the annular space between the second punch extension and the die throat to form an inwardly thickened end portion on the trailing end of the first blank, and also, simultaneously extrudes an inwardly thickened end portion on the leading end of the second blank;

then removing the extruded first blank and continuing and repeating the cycle on the second and successive blanks;

on each removed extruded blank, swaging radially inwardly, to a uniform outside diameter which is less than the extruded tube external diameter, both the thick ring section and the tube trailing end portion, i.e., the portion located between the thick ring section and the trailing end of the tube;

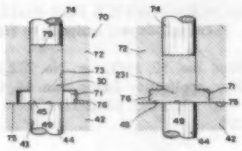
then swaging radially inwardly only said tube trailing end portion until its internal diameter is about the same as the thick ring section internal diameter and its outside diameter is less than the thick ring section outside diameter, to thereby form an integral spindle and axle tube.

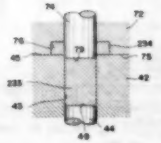
4,435,973

METHOD OF PRODUCING RING-SHAPED METAL PARTS

Shigeo Nakazawa, Yokohama, and Shintaro Sato, Fujisawa, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 25, 1981, Ser. No. 325,052
Int. Cl.³ B21D *28/00, 28/14, 28/24*
U.S. Cl. 72—327 **8 Claims**





1. A method of producing a plurality of identical ring-shaped or ring-like metal parts having inner and outer peripheries, comprising the steps of:

(a) applying a compression force to a blank of a metal material, which is in the shape of a solid rod having an outer periphery corresponding to the inner periphery of the metal parts to be produced, in a longitudinal direction of said blank so as to upset an end portion of said blank until said end portion transforms into a laterally expanded portion having a side periphery corresponding to the outer periphery of said metal parts and a length corre-

sponding to the thickness of said metal parts, said applying step including the sub-steps of inserting said blank into a fitting through-hole formed in a first die which has a flat die face and is formed with a recess in said die face, said recess bieng coaxial with said through-hole and having a depth corresponding to the thickness of said metal parts and an outer periphery corresponding to the outer periphery of said metal parts, such that said end portion of said blank longitudinally protrudes into said recess and comes into contact with a flat die face of a second die which is arranged opposite to said first die and held stationary with said die face thereof in close contact with said die face of said first die such that the second die face, recess of the first die, punch and through-hole form a closed cavity, said first die being provided with a punch which is slidably fitted in said through-hole to come into contact with the other end of said blank, and moving said punch toward said second die to longitudinally compress said end portion of said blank within said closed cavity against said die face of said second die until a space provided by a peripheral region of said recess and defined between the bottom of said recess and said die face of said second die is completely filled with a laterally expanded portion of said end portion of said blank;

(b) subjecting said laterally expanded portion to shearing along a plane defining the outer periphery of said blank thereby parting said laterally expanded portion into a peripheral portion, which is one of said metal parts, and a central portion which remains as an end portion of the blank shortened by the step (a); and

(c) repeating the steps (a) and (b) by using the shortened blank remaining after the step (b) in place of said blank in the initial step (a),

wherein said second die is formed with a through-hole which is coaxial with and identical in cross-sectional shape with said through-hole in said first die and is provided with a plunger slideably fitted into said through-hole thereof, the step (a) being performed by keeping an end face of said plunger flush with said die face of said second die to serve as part of said die face of said second die so that the end face of said plunger and the die face of the second die present a substantially planar surface to the recess of the first die, the step (b) being performed by forcing said punch to move toward said second die while said first and second dies are kept in the state at the end of the step (a) thereby thrusting the blank except said laterally expanded portion and simultaneously moving said plunger in compliance with the movement of said punch until the end face of said punch which is in contact with said blank enters said through-hole in said second die.

4,435,974

METHOD AND APPARATUS FOR LOCATING LEAKAGES IN PIPES AND SIMILAR CONDUITS

Helmut V. Fuchs, Weil; Gerold Schupp, and Carl-Alexander Voigtsberger, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zur Foerderung der Angewandten Forschung E.V., Munich, Fed. Rep. of Germany

Filed Nov. 20, 1981, Ser. No. 323,298

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1980, 3045660

Int. Cl.³ G01M *3/24*

U.S. Cl. 73—40.5 A **12 Claims**

1. A method for finding the position of leaks in a fluid conveying pipe-line such as in a water supply networks, comprising the steps of:

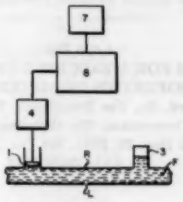
(a) attaching a sound sensor at a first position in said pipe-line such that said sound sensor is in direct contact with said fluid;

(b) attaching a sound reflector at a second position in said pipe-line such that said sound reflector is in direct contact with said fluid and such that said sound sensor and said sound reflector are coupled acoustically through said fluid, said second position being spaced from said first position a predetermined distance;

(c) supplying the signal produced by said sound sensor into a signal analyzer;

(d) making an autocorrelation analysis of said signal in said signal analyzer;

(e) determining a characteristic propagation time difference from a characteristic maximum of such autocorrelation function which has been determined by said autocorrela-



tion analysis and which propagation time difference corresponds to the difference of the propagation time of the sound wave which has passed directly between said leak and said sound sensor and the propagation time of the sound wave which is has passed from said leak via said sound reflector to said sound sensor;

(f) determining the distance between the positions of said leak and said sound reflector from said obtained propagation time difference.

4,435,975

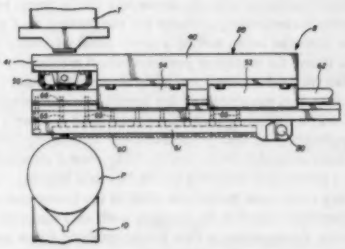
APPARATUS AND METHOD FOR CUTTING A FLAT SURFACE ON A METALLIC MEMBER

Robert M. Edward, Jr., The Woodlands, Tex., assignor to J B Development Corporation, The Woodlands, Tex.

Filed Dec. 28, 1981, Ser. No. 334,746

Int. Cl.³ G01N *3/40*

U.S. Cl. 73—81 **18 Claims**



1. Apparatus for cutting a flat surface on and testing the hardness of a metallic member comprising:

frame means including clamping means on which said metallic member may be placed for clamping said metallic member in a firmly fixed positon;

tester head means mounted on said frame means in a fixed position directly above said clamping means;

a broach frame mounted on said frame means for movement between a first position below said tester head means, above said metallic member and engageable by said metallic member and against which said metallic member may be firmly clamped by said clamping means and a second position away from said tester head means and not engageable by said metallic member when on said clamping means, allowing said metallic member to be firmly

clamped against said tester head means by said clamping means;

a broach blade having cutting means thereon carried by said broach frame for reciprocal movement, when said broach frame is in said first position, between a first terminal position and a second terminal position for cutting a flat surface on said metallic member when clamped against said broach frame; and

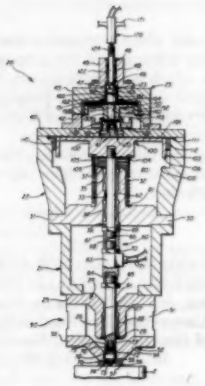
power means mounted on said frame means and attached to said broach blade for moving said broach blade between said first and second terminal positions.

4,435,976

APPARATUS FOR MEASURING THE HARDNESS PROPERTIES OF MATERIALS

Robert M. Edward, Jr., The Woodlands, Tex., assignor to J B Development Corporation, The Woodlands, Tex.

Filed Dec. 28, 1981, Ser. No. 334,747
Int. Cl.³ G01N *3/44*
U.S. Cl. 73—83 **12 Claims**



1. Improved apparatus for measuring the hardness properties of materials comprising a frame for supporting said apparatus and the material to be tested; a tester head assembly mounted on said frame for applying predetermined measuring forces to said material and a clamp assembly mounted on said frame for supporting said material and for applying a clamping force to clamp said material against said tester head assembly prior to said application of said predetermined measuring forces; said tester head assembly including housing means attached to said frame; a penetrator assembly carried by said housing, including an axially reciprocal penetrator shaft at the lower end of which is a penetrator member for contact with said material; operating means for applying a first predetermined force and a second and greater predetermined force to said penetrator shaft for indentation of said material by said penetrator member and means for measuring the difference of indentation of said material by said first and second predetermined forces; wherein the improvement comprises:

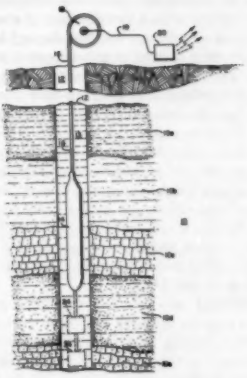
an electronic load cell for measuring said first and second predetermined forces attached between and connecting a first shaft portion, being the lower end of said penetrator shaft, and a second shaft portion, being the upper end of said penetrator shaft; said housing means comprising a lower housing portion in which said penetrator shaft is carried, an intermediate housing portion and an upper housing portion, said operating means including first and second piston members carried in said upper and intermediate housing portions, respectively, and responsive to fluid pressures applied thereto for applying said first and second predetermined forces to said penetrator shaft.

4,435,977

METHOD FOR LOCATING LOW RESISTIVITY PAY SANDS USING WELL LOGS

Luke S. Gournay, Rockwall, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 18, 1982, Ser. No. 339,963
Int. Cl.³ E21B *49/00*
U.S. Cl. 73—152 **13 Claims**



11. A method of locating potential low water cut hydrocarbon producing regions of a sand formation comprising the steps of:

producing a first log containing permeability values for the formation along the length of a borehole extending into the formation;

producing a second log containing porosity values for the formation along said length;

producing a third log of specific surface area values of the formation along said length from said first and second log; and

identifying potential low water cut hydrocarbon producing regions along said length of the formation using said third log.

4,435,978

HOT WIRE ANEMOMETER FLOW METER

John J. Glatz, 24351 Spartan, Mission Viejo, Calif. 92691

Filed Sep. 7, 1982, Ser. No. 415,261
Int. Cl.³ E21B *47/00*; G01F *1/68*
U.S. Cl. 73—155 **14 Claims**

1. An improved flow meter device for measuring flow through a conduit comprising:

an elongate member sized to be received within a flow conduit;

plural struts pivotally mounted to said elongate member extensible radially outward from said elongate member to contact said flow conduit and anchor said elongate member at a desired location within said flow conduit;

means for selectively radially extending and retracting said plural struts from said elongate member; and

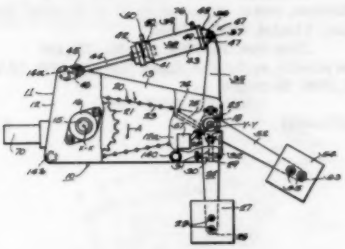
plural anemometers mounted along the length of struts for generating a variable electrical signal in response to the amount of flow medium passing across said anemometers.

4,435,979

APPARATUS FOR TESTING VALVE ACTUATORS

William H. Gilgore, York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jul. 2, 1982, Ser. No. 394,855
Int. Cl.³ G01M *19/00*
U.S. Cl. 73—168 4 Claims



1. An apparatus for subjecting a test actuator to torque loads which simulate torque loads experienced by an actuator while operating a butterfly-type valve between a valve fully opened position and a valve fully closed position in a fluid conduit where the torque loads to be simulated include a dynamic torque load experienced by the actuator by reason of fluid flow against the valve within the conduit as the valve moves between fully opened position and fully closed position, and a seating torque load experienced by the actuator as the valve moves from a position at which the valve begins to contact a valve seat to said fully closed position; the apparatus comprising:

a first mass supported away from a horizontal axis for rotation about said axis; said first mass being of a preselected weight and displacement from said axis to generate a first cyclic torque load at said axis proportional to said dynamic torque load as said first mass rotates from a first position corresponding to said valve fully opened position to a final position corresponding to said valve fully closed position;

a second mass supported away from a horizontal axis for rotation about said axis operable to rotate from a rest position to an end position as said first mass rotates from a valve seating position corresponding with said position at which a valve begins to contact a valve seat to said final position; said second mass being of a preselected weight and displacement from said axis to generate a second cyclic torque load such that a sum of said first cyclic torque load and said second cyclic torque load is proportional to said seating torque load as said first mass rotates from said valve seating position to said final position;

means for transmitting said first cyclic torque load to said test actuator with said first cyclic torque load proportionally translated to approximate said dynamic torque load; and,

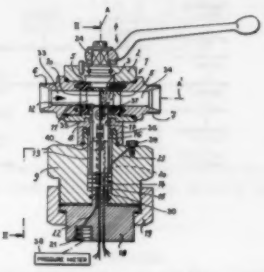
means for transmitting said second cyclic torque load to said test actuator as said first mass rotates from said valve seating position to said final position with said first cyclic torque load and said second cyclic torque load summed and the sum of said loads proportionally translated to approximate said seating torque load.

4,435,980

PIPE-MOUNTED VALVE-TYPE FLOW METER

Ulrich Schmidt, Lahn-Steindorf, Fed. Rep. of Germany, assignor to Firma Rötelmann & Co., Werdohl, Fed. Rep. of Germany

Filed Jun. 18, 1982, Ser. No. 389,971
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1982, 3200587
Int. Cl.³ G01F *15/02*
U.S. Cl. 73—198 20 Claims



1. An apparatus for measuing at least one parameter of a fluid flowing between two conduit sections, said apparatus comprising:

a housing connected between said sections and having a throughgoing main passage communicating therebetween and an externally open branch passsage extending from said main passage between said sections, said housing being formed at the junction of said main branch passages with a valve seat;

a valve body on said seat formed with a throughgoing and at least generally T-shaped valve passage having a pair of arm sections alignable with said main passage and a leg section aligned with said branch passage,

means for displacing said body relative to said main passage at said seat between a flow position in which said valve passage is aligned with said main passage and said fluid can flow through said main passage between said sections and a blocking position in which said valve passage is not aligned with said main passage and fluid cannot flow through said main passage between said sections, said valve seat sealing said valve passage from said main passage in said blocking position

a sensor for said one parameter extending through said branch passage into said valve passage; and

means for releasably securing said sensor to said housing and for externally sealing said branch passage.

4,435,981

AIRBORNE GRAVITY SURVEYING

Franklin D. Carson, Hilltown Township, Bucks County, and William R. Gumert, East Rockhill Township, Bucks County, both of Pa., assignors to Carson Helicopters, Inc., Perkasie, Pa.

Filed Oct. 9, 1981, Ser. No. 309,906
Int. Cl.³ G01V *7/16*
U.S. Cl. 73—382 R 17 Claims

1. Apparatus for airborne gravity surveying which comprises

an airborne vehicle,

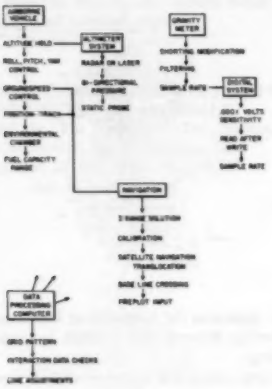
means on said vehicle for controlling the flight of said vehicle along a preplotted path at a preselected level responding to vertical movement, including means to move the vehicle vertically without changing its pitch,

said controlling means comprising a plurality of altimeters for determining the preselected level for correction of the

path of the vehicle and providing signals for recording on a tape,

said controlling means comprising navigating means providing signals for recording on a tape for indicating deviation of the flight of the vehicle from the preplotted path vertically and horizontally and for correction of the path of the vehicle,

signal means including gravity meter and magnetic means providing signals for recording on a tape,



means for digitalizing the signals from said gravity meter means at a predetermined sample rate and at a high order of sensitivity,

recording means including a tape for recording signals from said altimeter means, said navigation means, said signal means and said digitalizing means, and

computer means for indicating the departure of the vehicle from the preplotted path.

4,435,982

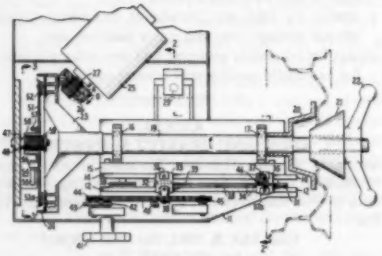
MACHINE AND METHOD FOR BALANCING WHEELS

Willy Borner, Cupertino, and Bernie F. Jackson, Los Gatos, both of Calif., assignors to Balco, Inc., San Jose, Calif.

Filed Feb. 20, 1981, Ser. No. 236,558

Int. Cl.³ G01M *1/22*

U.S. Cl. 73—462 **22 Claims**



1. A wheel balancing machine which comprises a chassis, a rotatable shaft, means on one end of said shaft for removably mounting the wheel to be balanced, carrier means for supporting said shaft on said chassis, driving means for rotating said shaft to a first angular velocity greater than a predetermined second angular velocity, clutch means for decoupling said driving means from said shaft when said first angular velocity has been attained thereby allowing said shaft and wheel to rotate freely and decelerate, means for measuring the angular velocity of the shaft and activating unbalance measuring means when said angular velocity is equal to said predetermined second angular velocity after said driving means has been decoupled from said shaft, said unbalance measuring means being adapted to measure unbalance during the first full revolution of said shaft after said shaft reaches said predetermined second angular velocity, and means for displaying the value of unbalance so measured, said first angular velocity being selected from two or more velocities in response to said angular velocity measuring means so as to provide the lowest velocity of said two or more velocities that will permit a 2 to 20 second settling period between decoupling said driving means and activating said unbalance measuring means.

4,435,983

HANDLE STEM FOR A BICYCLE

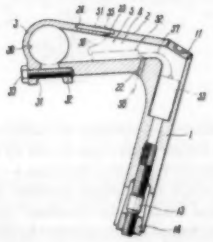
Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Nov. 10, 1981, Ser. No. 320,105

Claims priority, application Japan, Nov. 22, 1980, 55-168009; Nov. 22, 1980, 55-168010

Int. Cl.³ G01P *1/02*

U.S. Cl. 73—493 **4 Claims**



1. A handle stem for a bicycle, which carries a handle bar, said handle stem comprising

a stem body,

a projecting portion extending from a top of said stem body radially outwardly thereof, said projecting portion containing an opening in an upper surface thereof and

a holding portion provided at a foremost end of said projecting portion and having an insertion bore for said handle bar,

said projecting portion being provided with an indicator comprising: a display unit which electrically displays running condition of the bicycle; electronic components; and a power source; said projecting portion containing a first hollow area located below said upper surface and opening therein, said first hollow area housing therein said electronic components of said indicator, said display unit of said indicator being mounted above said first hollow area and over said opening, electronically connected to said electronic components through said opening, and exposed to view on a top surface of said projecting portion.

4,435,984

ULTRASONIC MULTIPLE-BEAM TECHNIQUE FOR DETECTING CRACKS IN BIMETALLIC OR COARSE-GRAINED MATERIALS

George J. Gruber, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Continuation-in-part of Ser. No. 142,216, Apr. 21, 1980, Pat. No. 4,299,128. This application May 28, 1981, Ser. No. 268,145

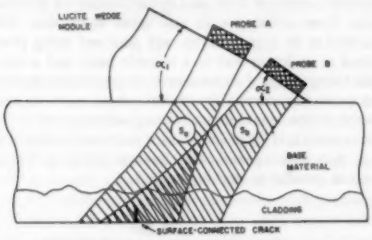
Int. Cl.³ G01N *29/04*

U.S. Cl. 73—628 **33 Claims**

1. An ultrasonic test method of detecting and confirming defects in a test specimen comprising:

(a) detecting suspect defects by:

(1) transmitting at least two detection beams of a same wave mode from a first set of multiple detection probe positions so that said two detection beams overlap in a region of interest in said test specimen;
(2) receiving echoes of said two detection beams from said region of interest at a second set of multiple detection probe positions;
(3) directionally averaging said echoes by means of a summing device to at least partially cancel at least some interference echoes and to reinforce at least some defect reflected echoes if a defect is present in said region of interest;
(4) recording by means of a recording device substantial directionally averaged echoes as called echoes, said called echo indicating one or more suspect defects in said region of interest;
(b) confirming suspect defects by:



(1) transmitting at least two confirmation beams of different wave modes from at least one first confirmation probe position so at least two of said confirmation beams of said different wave modes overlap in said region of interest in said test specimen;
(2) receiving echoes of said confirmation beams of said different wave modes from said region of interest at at least one second confirmation probe position;
(3) moving said first confirmation probe position to move at least some of said confirmation beams of said different wave modes with respect to said region of interest to produce echoes having an associated reflected-pulse pattern if a defect is present in said region of interest;
(4) recording by means of a recording device an associated reflected pulse pattern as confirming a suspect defect in said region of interest.

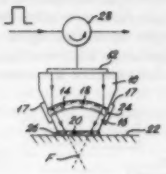
4,435,985

ACOUSTIC COUPLING DEVICE

Hemantha K. Wickramasinghe, London, England, assignor to National Research Development Corporation, London, England

Filed Apr. 15, 1982, Ser. No. 368,811
Claims priority, application United Kingdom, Apr. 16, 1981, 8112014
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—642 **9 Claims**

1. An acoustic coupling device comprising:
an acoustic lens arranged to provide a convergent beam of acoustic radiation; and
an acoustic coupler having adjacent and spaced from the acoustic lens a convex surface over which the convergent beam of radiation is incident in an approximately normal direction,
the coupler having opposite the convex surface a coupling surface which conforms to the surface of an object to be investigated and the beam converging beyond said coupling surface;
there being between the acoustic lens and the acoustic coupler a first coupling liquid such that the ratio of the velocity of sound in the acoustic lens and the velocity of sound in the liquid is greater than 3,



the device also having between the acoustic coupler and the object a layer of a second, low acoustic loss, coupling liquid.

4,435,986

PRESSURE TRANSDUCER OF THE VIBRATING ELEMENT TYPE

Hubert Choffat, Bole, Switzerland, assignor to Centre Electronique Horloger S.A., Neuchatel, Switzerland

Filed Nov. 9, 1981, Ser. No. 319,286
Claims priority, application Switzerland, Nov. 12, 1980, 8387/80
Int. Cl.³ G01L *9/08*
U.S. Cl. 73—702 **14 Claims**

1. A pressure transducer comprising a vibrating membrane which comprises a reduced-thickness bottom of a cavity in a first member which is fixed on and closed by a support member forming a first cavity, the vibrating membrane at least partially comprising a piezoelectric material and having a curvature therein, and means for exciting the membrane and maintaining oscillations of the membrane at its resonance frequency and for producing an electrical signal at that resonance frequency.

4,435,987

DEVICE FOR CORRECTING TORQUE DETECTED BY AN ELECTRIC DYNAMOMETER

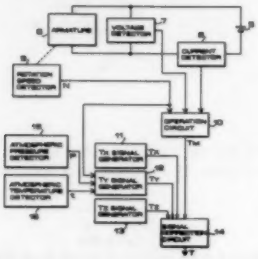
Hiroshi Sugimoto, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1982, Ser. No. 351,895
Claims priority, application Japan, Feb. 25, 1981, 56-27240
Int. Cl.³ G01L *3/22*
U.S. Cl. 73—862.17 **5 Claims**

1. A device for correcting torque detected by an electric dynamometer comprising:
(a) detection means for detecting at least an armature current, an armature voltage and a rotation speed of the electric dynamometer and generating outputs comprising detection signals;
(b) an operation circuit calculating the torque that acts between the yoke and the armature of the electric dynamometer, upon receipt of detection signals from said detection means, and providing an output;

(c) a windage-loss torque correction signal generator generating an output comprising a windage-loss torque correction signal upon receipt of an output related to the rotation speed sent from said detection means, an output comprising a detection signal sent from an atmospheric pressure detector and an output comprising a detection signal sent from an atmospheric temperature detector;

(d) a friction torque correction signal generator generating an output comprising a friction torque correction signal of the bearings of the electric dynamometer;



(e) an eddy-current-loss torque correction signal generator generating an output comprising an eddy-current-loss torque correction signal; and

(f) a signal correction circuit subtracting the sum of said correction signals from the output of said operation circuit, upon receipt of the output from said operation circuit, said windage-loss torque correction signal, said friction torque correction signal, and said eddy-current-loss torque correction signal.

4,435,988

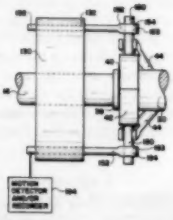
APPARATUS FOR INDICATING CRITICAL TORQUE LOAD

Stuart E. Corry, Hallett, and Lanny V. Grade, Oklahoma City, both of Okla., assignors to The Geolograph Company, Oklahoma City, Okla.

Filed Jul. 13, 1981, Ser. No. 282,966

Int. Cl.³ G01L *3/14*

U.S. Cl. 73—862.19 **1 Claim**



1. Apparatus for indicating torque load in a drill string of a shaft driven drilling machine of the type having a rotary table for rotating the drill string and wherein a shaft rotates the rotary table from an external rotary drive; comprising a torque indicating device having an input section adapted to be rotatably connected to the external rotary drive and an output section adapted to be rotatably connected to the rotary table, said input and output sections being disposed in axial alignment and being drivingly connected to each other so as to rotate conjointly, said input section having an input shaft adapted to be connected at a first longitudinal end thereof to the rotary drive and having a first coupling means mounted on a second longitudinal end of said input shaft; said output section having a second coupling means and an output shaft, said second coupling means being mounted on a first longitudinal end of said output shaft and said output shaft being adapted to be connected at a second longitudinal end to the rotary table, said first coupling means having a first spiral spline means thereon, said second coupling means having a second spiral spline means thereon complementary to said first spiral spline means, said first and second coupling means being connected to each other so as to be in driving relationship with each other through said spiral spline means, an input bearing being received in an input housing and rotatably supporting said input shaft, said input bearing allowing for axial movement of said input shaft toward said output section under increased torque load conditions, said second coupling means being axially immovable, resilient means preventing axial movement of said input shaft toward said output section under normal rotary driving conditions, and a sensing means for measuring the degree of axial movement of said input shaft, wherein said sensing means comprises a collar received in an annular groove recessed into said input shaft at a point adjacent said first coupling means, a pair of pins extending radially outwardly in opposite directions from said collar, a yoke for preventing said collar from rotating with said input shaft, said yoke being attached at its upper end to said pins and being pivotally attached at its lower end to a suitable base, and a pair of slide links being adapted to be received over the ends of said pins and extending rearwardly therefrom so as to be received in suitable holes in said input housing wherein said collar moves axially with said input shaft under increased torque load conditions thus causing said slide links to move a corresponding distance parallel to said input shaft.

4,435,989

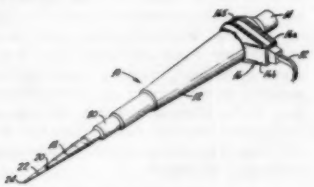
PLUNGER OPERATED PIPET

Richard C. Meyer, La Habra, and Edward L. Carroll, Garden Grove, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 165,909, Jul. 3, 1980, abandoned. This application Dec. 4, 1981, Ser. No. 327,393

Int. Cl.³ G01F *13/00*; B01L *3/02*

U.S. Cl. 73—864.14 **2 Claims**



1. Pipetting apparatus comprising:

a generally tubular body having an open forward end for receiving and expelling fluid and adapted to receive a replaceable open tip thereon;

a plunger supported for axial movement in the body to draw fluid into and expel fluid from the open tip on the body with axial movement away from and toward the open end;

stop means movable between first and second locations in the body to halt movement of the plunger in one direction at first and second axial positions thereby establishing different stroke lengths of plunger movement in the body;

spring means for driving the stop means in one direction between the first and second locations;

arming means for energizing the spring means in response to the positioning of the replaceable tip on the body;

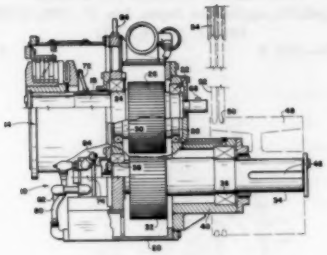
means for retaining the stop means in one of the first and second locations against action of the spring means; and

release means responsive to plunger movement away from the forward end during a first plunger stroke following energizing of the spring means for disabling the retaining means and allowing the spring means to drive the stop means to the other of the first and second locations whereby the first plunger stroke and the succeeding plunger stroke are of the different stroke lengths.

4,435,990
POWER TAKE OFF GEAR BOX

Samuel A. Chalmers, 8141 E. 48th, Tulsa, Okla. 74145

Filed Sep. 11, 1980, Ser. No. 186,127
Int. Cl.³ F16H *37/00*; F16D *25/04*
U.S. Cl. 74—15.63 6 Claims

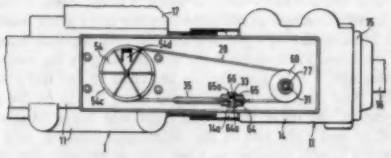


1. A power take off gear box assembly for transmitting power between a drive source and a driven source and comprising rotatable input shaft means, clutch means operably connected between the drive source and input shaft means for transmitting rotation to the input shaft means, rotatable permanent output shaft means having the longitudinal axis thereof disposed in substantial vertical planar alignment with the longitudinal axis of the input shaft means, gear train means interposed between the input shaft means and output shaft means for transmitting rotation to the output shaft means, the relative position between the input shaft means and output shaft means providing for ease of forward and reverse directions of rotation for the output shaft means, housing means encasing the gear train means, independent self-contained lubricating means operably secured to the output shaft means and in communication with the interior of the housing means for providing internal lubrication surrounding the gear train means for facilitating maintenance of the gear box assembly, and wherein the housing means encasing the gear train means includes drop box means having mounting pad means carried thereby and disposed in substantial horizontal planar alignment with the longitudinal axis of the output shaft means to compensate for side loading forces during operation of the power take off gear box assembly.

4,435,991
POTENTIOMETER DRIVE FOR DISPLACEMENT TRANSDUCER OF RECIPROCATING UNIT

Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Apr. 20, 1981, Ser. No. 255,730
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1980, 3014903
Int. Cl.³ F16H *27/02*
U.S. Cl. 74—89.2 14 Claims



1. A backlash-free drive connection between a rotatable control disc and a rotary potentiometer comprising in combination:

a mounting wall extending substantially perpendicularly to the rotational axis of the control disc;

a journal support rotably supporting the control disc in the mounting wall;

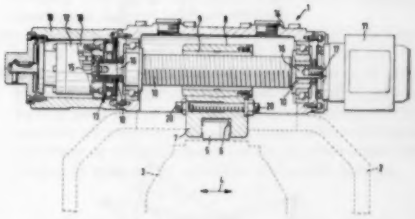
means for releasably clamping the potentiometer drive shaft to the control disc in such a way that they form a rigid rotatable assembly; and

means for blocking the potentiometer housing against rotation relative to the mounting wall in such a way that only circumferentially oriented antirotation forces are transmittable from the mounting wall to the potentiometer housing and the weight of the potentiometer is carried entirely by the potentiometer shaft and the connected control disc.

4,435,992
ADJUSTING DEVICE FOR AXIAL AND RADIAL PISTON MACHINES

Heinz Berthold, Bildechigen, Fed. Rep. of Germany, assignor to Brueninghaus Hydraulik GmbH, Fed. Rep. of Germany

Filed Feb. 6, 1981, Ser. No. 232,258
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1980, 3005168
Int. Cl.³ F16H *25/20*
U.S. Cl. 74—89.15 3 Claims



1. A motorized adjusting device for an axial and radial piston machine wherein a cylinder block is reciprocated by a setting element to control a charge delivered by the machine, said adjusting device comprising;

(a) a housing having a threaded output shaft journaled for rotation therein, said output shaft being substantially parallel to the reciprocating axis of a cylinder block to be adjusted; said housing and said axial and radial piston machine providing a defined enclosure surrounding said output shaft and a setting means;

(b) said setting means mounted on said threaded shaft to be reciprocated along said shaft as said shaft is rotated, said setting means engaging a cylinder block to be adjusted;

(c) a servo motor removably mounted outside said housing and said enclosure at one end of said output shaft to provide for replacement of only the servo motor without disturbing the setting of said setting means in said shaft;

(d) an input shaft journaled for coaxial rotation within said output shaft, said input shaft being connected to said servo motor at one end thereof;

(e) a planetary transmission and overload protection means removably mounted outside said housing and said enclosure at the other end of said output shaft, opposite said servo motor, said overload coupling means connected between said output shaft and a cage member for said planetary transmission, said planetary transmission also having a sun gear connected to said input shaft, said transmission mounted to provide for a replacement of only the transmission and overload coupling without disturbing the setting means on said shaft; wherein rotation of the servo motor rotates said input shaft, said transmission and said overload protection device to power the rotation of said output shaft and thereby reciprocate said setting means mounted on said output shaft;

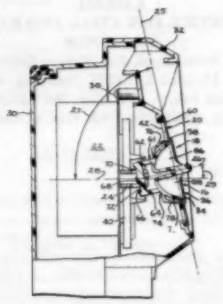
whereby either the servo motor or the transmission means may be separately removed from the housing without disturbing the enclosure surrounding said shaft and said setting element.

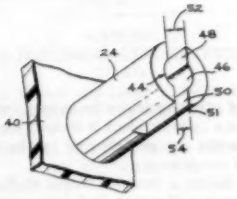
4,435,993

CONTROL KNOB TO SHAFT ASSEMBLY

Allen W. Scott, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 29, 1982, Ser. No. 362,587
Int. Cl.³ G05G 1/10
U.S. Cl. 74—553 5 Claims





1. A control knob to shaft assembly comprising:

a rotatable, bifurcated shaft, the bifurcation spanning the diameter of the shaft and having a central cylindrical bore interconnecting two open slots, one of which has a width larger than the other,

an escutcheon plate in a plane that intersects the longitudinal axis of the shaft at an acute angle, said escutcheon plate having an opening therethrough,

a knob received in the escutcheon plate opening having,

a first portion larger in diameter than the escutcheon plate opening;

a second portion having two projecting spaced parallel legs with a yoke connecting and spanning the legs, said yoke having a central ball-shaped portion with a diameter slightly smaller than the cylindrical bore in the shaft and received in said cylindrical bore, and two cross elements between the ball-shaped portion and each of said legs, one cross element having a diameter slightly smaller than the width of one of said open slots in the shaft and receivable therein and the other cross element having a diameter slightly smaller than the width of the other open slot in the shaft and received therein, and

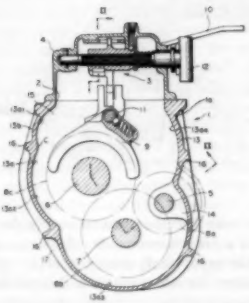
a third portion interconnecting the first and second portions, said third portion having means to rotatably secure the knob to the escutcheon plate.

4,435,994

AUTOMOBILE TRANSMISSION CASING HAVING REINFORCEMENT

Shuji Hata; Toshio Yamada, and Katsuji Murakawa, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jun. 26, 1981, Ser. No. 277,603
Claims priority, application Japan, Jun. 27, 1980, 55-90857[U]
Int. Cl.³ F16H 57/02
U.S. Cl. 74—606 R 3 Claims



1. A transmission casing for automobiles which comprises a casing body having a wall formed at an upper portion with an opening which is adapted to be closed by a top cover provided with gear changing motion transmitting means, said casing being adapted for receiving a main shaft, a countershaft and a reverse idle gear shaft which extend longitudinally of the casing body for carrying transmission gears, said wall of the casing body having an inner surface which is of a cross-section comprised of a plurality of outwardly curved portions connected with each other at node portions projecting inwardly with respect to the curved portions, at least one of said curved portions having a curvature which is not coaxial with one of said shafts, said wall being of a substantially uniform thickness and formed with reverse idle gear support bracket means in the vicinity of one of the node portions for supporting the reverse idle gear shaft, one of said node portions being located in the vicinity of the point of intersection between the inner surface of the wall of the casing body and a line passing through the center of said main shaft and the center of the reverse idle gear shaft.

4,435,995

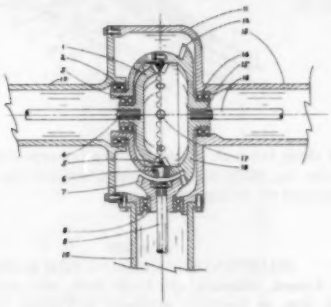
POSITIVE DRIVE DIFFERENTIAL FOR VEHICLE INCLUDING TRACTORS

Walter E. Welander, Box 449, Virginia, Minn. 55792

Continuation-in-part of Ser. No. 129,034, Mar. 10, 1980, abandoned. This application Jul. 10, 1980, Ser. No. 168,439
Int. Cl.³ F16H 1/44, 1/40
U.S. Cl. 74—711 2 Claims

1. A positive drive differential apparatus for a wheeled vehicle including drive wheels comprising, an axle housing, right and left coaxially aligned axles, a drive shaft, a pinion gear fixedly attached to and driven by the drive shaft, a differential housing having right and left hubs on opposite sides—each journaled for rotation in the axle housing by the means of ball-bearings, a ring gear fixedly attached to the differential housing, said ring gear engaging and being driven by the pinion gear on the drive shaft, said right axle being fixedly attached to said right hub of the differential housing, said left axle being fixedly attached to a left side differential gear journaled by the means of ball-bearings for rotation within the differential housing adjacent to the left hub of said differential housing, a plurality of spaced apart planetary gears journaled for rotation by the means of a bushing upon the inside of the

differential housing, said planetary gears being in engagement with the left side differential gear for transmitting power from the differential housing to the left side differential gear and the axle connected thereto, said left side differential gear is as large as constructionally possible relative to the size of each of said planetary gears which are as small as constructionally possible,



and because the relatively high rotational speed needed by the planetary gears compared to the housing speed cannot be attained when power or speed is applied to the differential housing the small differential gears lock instead thereby passing the power to the left axle and wheel, but allowing the axles and wheels to turn at different speeds when power is applied gradually as a result of uneven road conditions or turns.

4,435,996

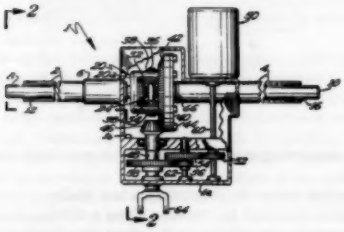
DIFFERENTIAL ASSEMBLY FOR VEHICLES

Oliver L. Gorby, Fargo, N. Dak., assignor to Agri-Tech Ltd., Inc., Barnesville, Minn.

Filed Dec. 17, 1979, Ser. No. 104,515

Int. Cl.³ F16H *1/40*

U.S. Cl. 74—713 **3 Claims**



1. A differential for vehicles comprising:

a differential housing;

a pair of axle tubes affixed to opposite sides of said housing;

a pair of axles positioned longitudinally within said axle tubes with their inner ends extending into said housing;

a differential carrier in the form of a walled enclosure defining a central cavity, said carrier being positioned within said housing and directly and completely supported on the inner ends of said axles at axially aligned apertures in opposite side walls of said carrier enclosure through which the inner ends of said axles extend into said central cavity, the portions of said inner ends of said axles extending through said apertures being bearing surfaces on which said differential carrier is directly rotatably supported;

intermeshing, differential gears mounted on said carrier and said axles within said central cavity, two side gears of said intermeshing gears being affixed to said inner ends of said axles entirely within said central cavity, said side gears and all portions thereof being completely contained inside of the walled enclosure of said differential carrier within said central cavity;

a ring gear mounted on said differential carrier for rotation therewith;

a pinion gear in meshing engagement with said ring gear, said pinion gear being affixed to a power input shaft; and

bearing means comprising a pair of bearings positioned at longitudinally spaced locations in each of said axle tubes and directly, rotatably supporting said axles therein, one of said bearings of each pair of bearings being located adjacent to a side wall of said housing in laterally spaced relation to said differential carrier enclosure and said differential gears to directly rotatably support said inner ends of said axles, whereby said axle inner ends are able to provide proper bearing support for said differential carrier;

one of said axle tubes is laterally adjusted so that its inner end projects a predetermined distance inside of said housing;

thrust bearing means positioned between the inner end of said one axle tube and one side of said differential carrier, whereby said one axle tube serves to position said differential carrier within said housing and to take the ring gear thrust load imparted thereto by said pinion gear;

one side wall of said differential carrier enclosure terminates laterally inwardly from one of said side walls of said housing, defining an open space therebetween having no bearings or support members therein;

the opposite side wall of said differential carrier enclosure is affixed to said ring gear for rotation therewith; and

said opposite side wall of said differential carrier enclosure bears against said thrust bearing and is laterally positioned by said inner end of said one axle tube, whereby no close machine tolerances are required on said differential carrier enclosure or on said housing for the accurate lateral positioning of said carrier enclosure within said housing.

4,435,997

AUTOMATIC CONTINUOUSLY VARIABLE TRANSMISSION

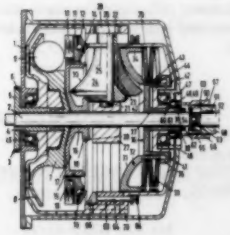
Hubertus J. van Doorne, deceased, late of Deurne, Netherlands (by Martinus P. J. H. van Doorne, executor), assignor to Erven Dr. Hubertus Josephus van Doorne, Eindhoven, Netherlands

Filed Sep. 22, 1981, Ser. No. 304,378

Claims priority, application Netherlands, Mar. 12, 1980, 8001480

Int. Cl.³ F16H *15/50*

U.S. Cl. 74—796 **10 Claims**



1. An automatic, continuously variable transmission comprising a speed-dependent clutch, a section cooperating with said clutch for steplessly controlling the transmission ratio between an input shaft and an output shaft, said section comprising a central shaft having a first longitudinal axis carrying at least one radially extending shaft with a conical body having a second longitudinal axis transverse to said first longitudinal axis rotatable about said second longitudinal axis thereof, said

conical body having an outer circumferential surface of concave curvature in the direction of said second longitudinal axis said conical body being longitudinally movable over said radial shaft, and being arranged to be driven for rotation about said shaft, a spring-loaded annular body cooperating with said conical body, depending on the desired torque-speed ratio, via an axial pressure exerted by the speed dependent clutch, along a direction substantially parallel to said first longitudinal axis, with said spring-loaded annular body further having a conical inner circumferential surface of convex curvature in the axial direction of said second longitudinal axis, and means for reversing the direction of rotation of the output shaft relative to the input shaft.

4,435,998

ROLLER TYPE PLANETARY GEAR HAVING A PRELOADING ARRANGEMENT

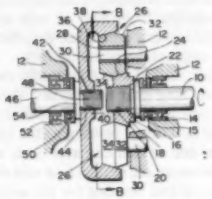
Keijiro Kinoshita, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 10, 1981, Ser. No. 242,279

Claims priority, application Japan, Apr. 7, 1980, 55-44588

Int. Cl.³ F16H *13/06*

U.S. Cl. 74—798 **7 Claims**



1. Planetary gearing comprising:

a first shaft and a sun roller threadably mounted on said first shaft, said sun roller tending to unscrew in a first axial direction along said first shaft when said first shaft is rotated in a first rotational direction;

a second shaft and a ring roller threadably mounted on said second shaft, said ring roller tending to unscrew in a second axial direction along said second shaft when said ring roller is rotated in said first rotational direction; and

planet roller shafts, planet rollers mounted on said planet roller shafts, and means for permitting said planet rollers to move in the axial direction of said planet roller shafts, said planet rollers being operatively interposed between and arranged to interconnect said sun roller and said ring roller, said ring roller rotating in a second rotational direction when said sun roller rotates in said first rotational direction.

4,435,999

SAW SHARPENING GUIDE

Cornelis J. M. Beerens, 40-42 Berkshire Rd., North Sunshine, Victoria, Australia

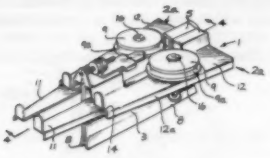
Filed May 11, 1982, Ser. No. 377,020

Claims priority, application Australia, May 11, 1981, PE8799/81

Int. Cl.³ B23D *63/10*

U.S. Cl. 76—36 **9 Claims**

1. A saw sharpening guide including a member adapted to be located on the blade of the saw in a straddling relationship to the toothed edge and carrying two grooved rollers arranged to guide a file for the sharpening of the teeth of the saw; said member having a dependent portion arranged to engage one side of the blade when the member is in said straddling relationship thereto, a locking element supported by the member for sliding movement relative thereto along a path inclined to the plane of the saw blade so as to move towards or away from the blade when moved in respective opposite directions along said path, and resilient means urging said locking element to



move along the path in the direction towards the saw blade whereby the blade may be gripped between the dependent portion and the locking element.

4,436,000

SHARPENING MACHINE FOR SAWS

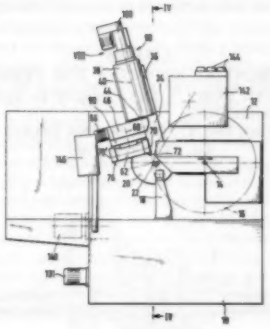
Peter Lenard, Biberach, and Ernst Beck, Maselheim, both of Fed. Rep. of Germany, assignors to Vollmer Werke Maschinenfabrik GmbH, Fed. Rep. of Germany

Filed May 14, 1982, Ser. No. 378,195

Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3120465

Int. Cl.³ B23D *63/14*

U.S. Cl. 76—41 **15 Claims**



1. A sharpening machine for sharpening toothed saws, comprising:

mounting means for supporting a saw blade;

a carrier mounted for rotation about a tilting axis oriented perpendicular relative to the plane of said saw blade;

a support mounted on the carrier, said support being arranged so as to selectively swivel relative to the carrier through at least 180° about a first swivel axis lying in the plane of the saw blade, and said support being arranged so as to selectively reciprocate along the first swivel axis;

a grinding head mounted on the support, the grinding head being reciprocable relative to the support between two operating positions;

a first grinding wheel mounted on the grinding head, the first grinding wheel having a first operating position in which an active face of the first grinding wheel is contiguous with the first swivel axis;

a second grinding wheel mounted on the grinding head and arranged in offset relationship with respect to the first grinding wheel, the second grinding wheel having a second operating position in which an active face of

the second grinding wheel is contiguous with the first swivel axis; and

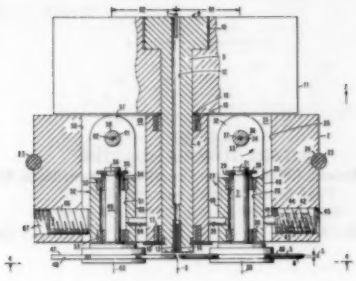
means for driving said first and second grinding wheels.

4,436,001

CENTRIPETAL CUTTER AND STRIPPER APPARATUS

James M. Ergler, Friendsville, Pa.; Harold Kohn, Endwell, and Michael Smetana, Johnson City, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1982, Ser. No. 387,992
Int. Cl.³ H02G 1/12
U.S. Cl. 81—9.51 10 Claims



1. Apparatus for cutting a piece from an elongated object having an inner core member and a concentric outer member and a predetermined portion of said outer member from said piece, said apparatus comprising:

a head rotatable about a predetermined first axis, said head having an opening concentric with said first axis,

first and second disc cutters mounted on a common shaft with a predetermined spacing therebetween, said shaft being rotatable about a second axis, and said shaft being pivotably mounted to said head a predetermined distance from said first axis, said first disc cutter being positioned between said opening and said second cutter,

means for positioning said object for advancement through said opening coincidentally along said first axis in a direction towards said cutters, and

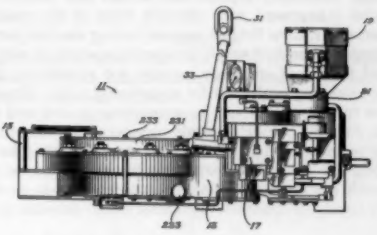
variable speed drive means for continuously rotating said head about said first axis, said head being rotated at a first speed by said drive means to pivot said shaft to an inner first radial position to place said first disc cutter in contacting and obstructing relationship with the leading end of said object and prevent the advancement thereof, said head being rotated by said drive means at an increased second speed relative to said first speed to pivot said shaft centrifugally to an outer second radial position to displace said first cutter from said contacting and obstructing relationship with said leading end of said object to allow further advancement of said object in said direction along said first axis to a predetermined axial position along said first axis beyond said second cutter, and said head being rotated by said drive means when said object is in said predetermined axial position at a predetermined reduced third speed relative to said second speed to pivot said shaft centripetally radially inward towards said first axis to place at least one of said first and second cutters in a predetermined lateral contacting relationship with said object to effect in coaction with said rotation of said head about said first axis the rotation of said shaft and said first and second cutters about said second axis, said rotation of said head about said first axis in coaction with said rotation of said first and second cutters about said second axis thereby effecting concurrent cutting of said piece from said object and of said portion from said outer member of said piece by said first and second cutters, respectively.

4,436,002

REVERSAL MECHANISM FOR POWER TONG

Kerry S. Kennington, and Ronald Baker, both of Austin, Tex., assignors to Hughes Tool Company, Houston, Tex.

Filed Dec. 11, 1981, Ser. No. 329,971
Int. Cl.³ B25B 17/00
U.S. Cl. 81—57.2 6 Claims



1. In a pipe gripping tong of the type having a stationary housing with a central opening for receiving pipe to be gripped, a ring gear rotatably mounted in said housing for movement about said central opening, a plurality of jaws supported by said housing and movable between an extended position for gripping pipe in said central opening and retracted position, said jaws being rotatably engaged by said ring gear, and drive means for transmitting rotary motion to said ring gear, wherein the improvement comprises:

a carrier assembly supported by said housing for rotation about said central opening, said assembly comprising upper and lower plates spaced apart by a plurality of pins, said jaws being mounted on said pins between said plates; and

said jaws being rotatable to said extended pipe gripping position in either of opposite directions from a single retracted position;

reversal means for controlling the direction of rotation of said jaws; and

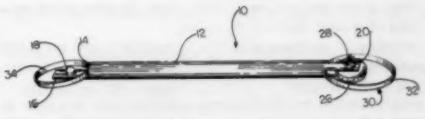
wherein said reversal means comprises a detent pin mounted on said lower plate at a right angle with respect thereto, one end of said pin being received within a transverse opening in said ring gear, said opening on said ring gear being located at the approximate mid point of two, off-set, longitudinal slots in said ring gear.

4,436,003

TOOL FOR SUPPORTING AND TURNING THREADED MEMBERS

Raymond G. Cox, 733 Cumberland Dr., St. Louis, Mo. 63125

Filed Jan. 7, 1982, Ser. No. 337,583
Int. Cl.³ B25B 13/00
U.S. Cl. 81—57.43 11 Claims



1. A tool having particular utility for supporting for rotation threaded members to be installed or removed from relatively inaccessible locations comprising an elongated body member having first and second opposite end portions and a passageway extending therebetween, each of said first and second end portions having an opening therethrough communicating with the passageway extending through said body member, a flange member extending endwardly from said first end portion, said

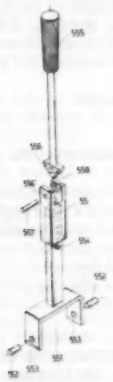
flange member having a sidewardly extending projection thereon in position to rotatably hold and support a threaded member when positioned thereon or therearound, a rotatable member and means extending endwardly from the second end portion of said body member for mounting the rotatable member thereon, an elongated endless flexible member extending through the passageway and through the opening associated with said second end portion and having portions thereof extending endwardly beyond said second end portion for tangential engagement with opposite sides of the rotatable member, said endless flexible member having another portion extending endwardly through the opening associated with the first end portion of said body member and around said sidewardly extending projection for engagement with a threaded member rotatably positioned in communication with said projection, rotation of said rotatable member when the endless flexible member is engaged with the opposite sides thereof providing the means for controllably tensioning and moving the flexible member longitudinally through said body member thereby imparting rotational movement to said threaded member.

4,436,004

UNIVERSAL MULTI-SOCKET RATCHET WRENCH

Hui-Huang Chang, 21, Alley 17, Lane 65 Chung-Chin Rd., Taichung City, Taiwan

Filed Mar. 3, 1982, Ser. No. 354,482
Claims priority, application Taiwan, Oct. 5, 1981, 7025849
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—60 **8 Claims**



1. A universal multi-socket ratchet wrench comprising in combination:

a socket gripping body having a plurality of cross slot equally formed around the longitudinal wall of the open head at one end and an annular recess circumscribed by a ring of spaced tooth at the other;

a plurality of gripping member respectively and movably received in said cross slots forming an adjustable hexagonal socket thereof;

a rotary conical member having a driving arm structure at one end and a plurality of screw teeth at the other being positioned within said annular recess of said socket gripping body with respect to said gripping members;

a force applying member having a force transmission projection at one end, a conical recess in the middle, and a spaced tooth portion at the other end, being fitly scarfed to the toothed portion of said socket gripping body in relation to said rotary conical member positioned therein;

a coupling sleeve connected to said force applying member;

control means installed in said coupling sleeve with respect to said force applying member and socket gripping body; and

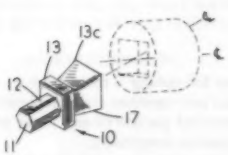
an operating handle telescopically and pitchably coupled with said coupling sleeve, whereby, with the arrangement of said driving structure and said control means, said hexagonal socket is adaptable to any hexagonal nuts or other bolt type fasteners for performing tightening and loosening operations by the user at any directions.

4,436,005

ROTARY TORQUE ADAPTER

Alan R. Hanson, 10024 Johnson Cir., Bloomington, Minn. 55437

Filed Mar. 10, 1982, Ser. No. 356,711
Int. Cl.³ B25B *23/00*; B25G *1/04, 3/00*
U.S. Cl. 81—177 G **1 Claim**



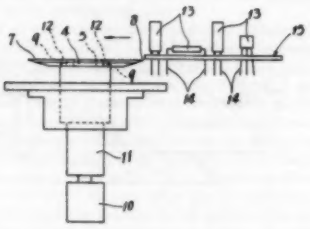
1. A tool adapter device having an integral hexagonal cross sectional drive shaft with a drive end, said drive end comprising a first and a second square cross-sectional drive end portion, wherein said first drive end portion is disposed between the drive shaft and said second drive end portion, and said first drive end portion is of constant cross-sectional area and said second drive end portion is comprised of a frustrum of a quadrangular pyramid which decreases from a cross-sectional area equal to the cross-sectional area of the first described drive end portion to decreasing cross-sectional areas decreasing in size in the direction toward and fixedly joined to said first described nonreducing cross-sectional area drive end portion, said first drive end portion operating cooperatively with the largest and equal-size square area of the second drive end portion which is placed on the opposite end of the device from said drive shaft to align coincidentally the centerlines of said adapter device and a socket tool when both drive end portions are slidably inserted into a square aperture or said socket tool to enable in-line rotational motion at low and relatively high speeds, of clockwise and counterclockwise direction, of continuous and noncontinuous rotation of said adapter device and said socket tool each about their respective coincident centerlines, whereby said frustrum of the quadrangular pyramid of said second drive end portion operating to transmit rotational motion at low and relatively high speeds, of clockwise and counterclockwise direction, of continuous and noncontinuous rotational motion of said tool adapter and the socket tool mated thereon, when said frustrum portion of the second drive end portion is partially slidably inserted into the square aperture of said socket tool thereby creating a hold-on force means and a "universal-joint" type swivel action allowed by the spatial clearance between said socket tool square aperture and said frustrum of the quadrangular pyramid, said second drive end portion and said socket tool each rotating about its own respective centerline with the centerlines of said second drive end portion and said socket tool being non-coincident and angularly disposed to each other.

4,436,006

METHOD FOR CUTTING LEAD WIRES

Hiromichi Nakamura; Haruya Urano; Tatsuo Kojima, all of Gifu, and Mitsunao Sekiwa, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka and Mitsubishi Metal Corporation, Tokyo, both of, Japan

Continuation of Ser. No. 972,066, Dec. 21, 1978, abandoned. This application Sep. 22, 1980, Ser. No. 189,299
Claims priority, application Japan, Dec. 29, 1977, 52-160008
Int. Cl.³ B23D *19/00, 35/00*
U.S. Cl. 83—13 6 Claims



1. In a method of cutting lead wires projecting from one side of print base panels by relatively moving the panels and a rotating circular cutting disk having a peripheral cutting edge adapted to sever the lead wires, the improvement comprising the steps of

providing the cutting disk with a main body and an annular hard layer of from 0.02 to 0.2 mm in thickness made from at least one material selected from the group consisting of cemented carbide, TiC, TaC, Cr_2C_3 and Al_2O_3, said hard layer forming said peripheral cutting edge and extending radially inwardly thereof, said main body having lower abrasion resistance than said hard layer; and

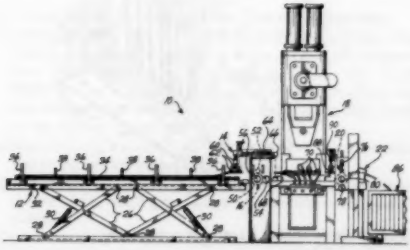
severing the lead wires successively from a plurality of panels by rotating the cutting disk at a speed sufficiently high to cause the peripheral cutting edge to be self-sharpening by chipping of said hard layer from successive contacts with the lead wires.

4,436,007

AUTOMATED FEED FOR A PUNCH PRESS AND METHOD OF USING SAME

Darrel L. Russon, and Warren H. Wheeler, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 30, 1981, Ser. No. 248,153
Int. Cl.³ B26D *1/40*
U.S. Cl. 83—23 11 Claims



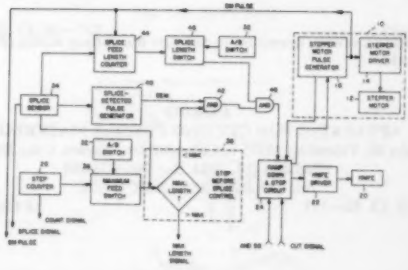
5. A method of handling feed stock through a punch press with steps comprising: aligning feed stock for passing through the dies of a punch press, establishing a reference line for the leading edge of the feed stock with respect to load position in the punch press, utilizing in-feed rolls for advancing the feed stock on the reference line, then to the punch position, stamping out a part, and incrementally advancing the feed stock through the punch press, laterally removing punched parts from the punched stock, switching to out-feed rolls for incrementally feeding the stock through the punch press once the scrap stock advances to the out-feed rolls, and removing the punched scrap stock.

4,436,008

PHOTOGRAPHIC FILM WEB CUTTER AND METHOD

Gerald R. Strunc, Maple Grove, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Apr. 5, 1982, Ser. No. 365,284
Int. Cl.³ B26D *5/24*
U.S. Cl. 83—42 12 Claims



9. A method of cutting a photographic film web made of spliced lengths of notched film with variable frame spacing into sections with a knife located at a fixed knife position along a feed path, the method comprising:

(a) advancing the web along a feed path so that a leading end of the web extends past the fixed knife position;

(b) sensing a splice in the web at a splice sensing position upstream from the fixed knife position; P1 (c) determining a first length of web from a cut end to to the splice;

(d) if the first length to the splice is less than a predetermined maximum length, advancing the web until a portion of the web adjacent the splice is aligned with the fixed knife position and activating the knife to cut a segment extending past the fixed knife position from the web; and

(e) if the first length of the splice is greater than the predetermined maximum length, advancing the web a second length so that a portion of the web greater than a predetermined minimum length from the cut end is aligned with the fixed knife position, and cutting the web.

4,436,009

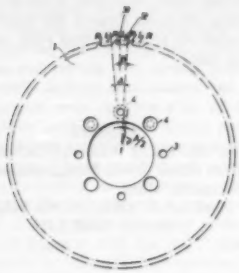
SAW UNIT HAVING MUTUALLY DISPLACEABLE SAW PARTS

Jonas W. Ask, Skogsstigen 10, S-183 50 Täby, Sweden

Continuation-in-part of Ser. No. 160,177, Jun. 17, 1980, abandoned. This application Feb. 25, 1981, Ser. No. 237,978
Int. Cl.³ B27B *5/29*
U.S. Cl. 83—72 10 Claims

1. A sawing unit comprising two sawblades having a plurality of teeth with equal toothpitch, said blades being pressed together and driven as a unit, the teeth of either blade disposed between a pair of teeth of the other blade, the teeth of each blade being inclined toward the plane of the other blade, said blades being mounted for relative displacement both in the direction of travel of said teeth and in the direction of feed of the object being sawed during a sawing operation, actuating means operably connected to at least one of said blades for

effecting relative displacement between said blades selected in said direction of travel of said teeth and in said direction of feed



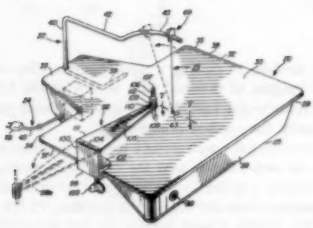
during a sawing operation to regulate the cutting action of the teeth.

4,436,010

APPARATUS FOR CUTTING FUSIBLE MATERIAL

John M. Valentine, 14975 E. Columbia Dr., Aurora, Colo. 80014

Filed Jun. 15, 1981, Ser. No. 273,654
Int. Cl.³ B26F *3/12*; B29C *17/10*
U.S. Cl. 83—171 **13 Claims**



1. An apparatus for cutting and shaping a fusible material workpiece, said apparatus comprising:

a. a base including a table having a top surface for supporting said workpiece;

b. a support member extending from said base and having a downwardly arcuate terminal section residing at an elevated position above the top surface of said table;

c. an elongate electrical resistance cutting element having

i. a lower end secured to said base, and

ii. an upper end directed toward the terminal section of said support member;

d. attachment means carrying the upper end of said cutting element and adjustably positionable along the terminal portion of said support member; and

e. electrical supply means for providing electrical energy to said cutting element.

4,436,011

SLICING DEVICE FOR ROUNDED FOOD ARTICLES

Frank W. Jones, P.O. Box 4074, Greenville, Del. 19807

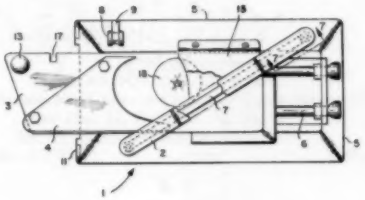
Filed Apr. 4, 1983, Ser. No. 481,764
Int. Cl.³ B26D *1/03, 4/18, 4/20, 7/06*
U.S. Cl. 83—425.3 **10 Claims**

1. A manual food slicer comprising a base;

a rack of parallel spaced blades mounted to said base at an acute angle with said base, said blades under tension and having two edges, one edge sharp;

a slide means mounted to the base;

a movable carrier assembly mounted to said slide means on the sharp side of the blades, said carrier assembly having a carrier plate connected to the slide means and carrier fingers which are a parallel array of planar segments mounted above and parallel with the carrier plate, said carrier fingers intermesh between the rack of parallel blades, in the open position the carrier assembly allows for inserting a food article between the rack of blades and the carrier fingers on to the carrier plate which extends beyond the lowest blade in the rack and between said lowest blade and the base, in the closed position the carrier fingers extend through the posterior side of the blades with



the carrier plate extending under the lowest blade sufficiently for the sliced food article to rest upon the carrier plate,

a guard mounted to the base and shielding the sharp edge of the blades and in combination with the rack of blades and the carrier fingers with the carrier assembly in the open position creating a vertical cavity in which the food article to be sliced is inserted;

a means stopping the base from moving relative to a work surface and;

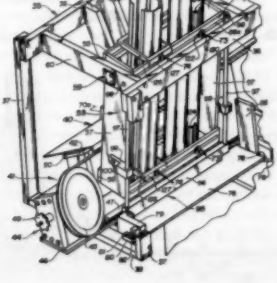
a locking means to secure the carrier assembly to the base.

4,436,012

PENDULUM-TYPE PRODUCT SLICING MACHINE

Thomas A. Hochanadel, Pickerington, Ohio, assignor to J. E. Grote Pepp-A-Matic Co., Inc., Columbus, Ohio

Filed Nov. 13, 1981, Ser. No. 321,244
Int. Cl.³ B26D *7/06*; B23D *53/06*
U.S. Cl. 83—703 **15 Claims**



1. A product slicing apparatus comprising

a structural frame,

a product carrier pivotally mounted on said frame for reciprocating movement about a substantially horizontal pivot axis, said carrier including at least one elongated product compartment extending generally perpendicular to and downward from said pivot axis and adapted to receive a product to be sliced and permit downward movement of

the product toward an open, bottom end of the compartment that is spaced a predetermined distance from said pivot axis,

product carrier drive means coupled with said carrier and operable to effect reciprocating swinging movement of said carrier about its pivot axis through a predetermined arc of sufficient extent to cause the entire bottom end of the product in the carrier and projecting from the lower end thereof to traverse a cutting line extending transversely across the path of movement of the product,

slice thickness control means operatively interengageable with the product carrier by said product carrier for controlling the distance of projection of the product with respect to the cutting line, and

slicing means mounted on said frame and including an endless slicing blade carried by support means for maintaining the blade in vertically spaced upper and lower runs having at least a portion of the lower run forming a generally rectilinear cutting blade section disposed in substantially horizontal, transversely extending relationship across the path of movement of the product at the cutting line, said slicing blade being supported to revolve in a place aligned with the cutting blade section of the lower run thereof and inclined to a plane tangent to an arc of movement of the product through the cutting line to position the upper run in sufficiently offset relationship to a plane perpendicular to the tangent plane to permit said product carrier to swing over the lower run in effecting complete cutting of the product carried thereby, and blade drive means operatively coupled with said blade to effect revolution thereof in performance of slicing operations.

4,436,013

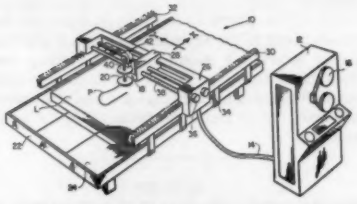
RECIPROCATING CUTTING APPARATUS WITH THETA DITHER

Heinz J. Gerber, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed Nov. 30, 1981, Ser. No. 325,673

Int. Cl.³ B26D *7/01*; B22B *3/00*

U.S. Cl. 83—747 **11 Claims**



1. An apparatus for cutting sheet material comprising:

a cutting tool in the form of an elongated cutting blade which reciprocates generally along an axis of reciprocation when performing a cutting operation, the cutting blade having a leading cutting edge and a trailing edge, the cutting edge and trailing edge being generally parallel to the axis of reciprocation;

means defining a support surface for supporting sheet material to be cut by the cutting blade;

means supporting the cutting blade with the axis of reciprocation of the blade generally perpendicular to the support surface;

motive means for translating the cutting blade generally progressively along a desired lie of cut relative to the sheet material on the support surface;

means for reciprocating the cutting blade along the axis of reciprocation in alternate upward and downward strokes between upper and lower limits of travel; and

mechanical means interposed between the cutting blade and the blade supporting means for producing from the reciprocation strokes of the blade limited oscillatory rotations of the cutting blade about the axis of reciprocation toward one side of the line of cut and then the other.

4,436,014

MITER BLOCK

Terence C. O'Neill, Northumberland, England, assignor to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

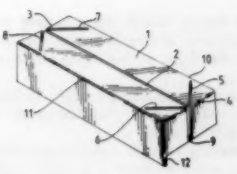
PCT No. PCT/GB81/00110, § 371 Date Feb. 5, 1982, § 102(e) Date Feb. 5, 1982, PCT Pub. No. WO82/00018, PCT Pub. Date Jan. 7, 1982

PCT Filed Jun. 25, 1981, Ser. No. 348,045

Claims priority, application United Kingdom, Jun. 25, 1980, 8020828

Int. Cl.³ B27G *5/02*

U.S. Cl. 83—762 **2 Claims**



1. A mitre block comprising a receiving slot to receive the article to be cut and two guide slots at right angles to one another for guiding the cutting implement, the guide slots intersecting with one another and with the receiving slot at a common intersection point at one end of the receiving slot.

4,436,015

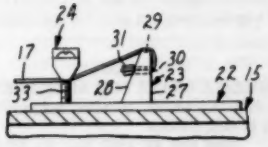
STRINGED INSTRUMENT BRIDGE

Milan S. Zarich, 801 Dodd Rd., West St. Paul, Minn. 55118

Filed Sep. 20, 1982, Ser. No. 420,123

Int. Cl.³ G10D *3/04*

U.S. Cl. 84—298 **4 Claims**



1. A bridge for a stringed instrument comprising:

a base plate,

an elongate end wall extending perpendicularly from said base plate and having a plurality of laterally spaced string grooves extending across said end wall spaced from said base plate,

an elongate bridge bar supported spaced from and parallel to said end wall and having string support grooves across its surface that faces said base plate corresponding to said string support grooves across said end wall, and

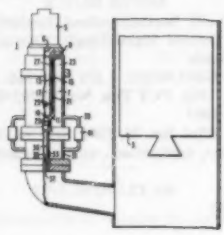
means for moving said bridge bar toward and away from said base plate while maintaining the spacing between said bridge bar string support grooves and said base plate less than the spacing between said end wall string support grooves and said base plate.

4,436,016

VARIABLE ENERGY MISSILE EJECT SYSTEM

Gaylord S. Olmsted, Los Altos, and Gordon W. Rosno, Saratoga, both of Calif., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 11, 1981, Ser. No. 291,746
Int. Cl.³ F41F 3/04
U.S. Cl. 89—1.809 7 Claims



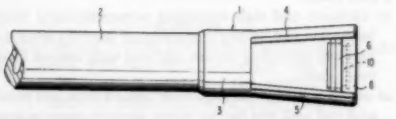
1. A variable energy missile eject system comprising an invariable gas generator having an outlet nozzle;
- a cooling chamber filled with a liquid and having an outer housing;
- a standpipe disposed within said housing to form a centrally located gas conduit in fluid communication with said gas generator outlet nozzle;
- said standpipe having a nozzle disposed in the lower portion;
- said standpipe having an inner and outer wall portion disposed to form an inner annular chamber above said standpipe nozzle and an outer annular chamber extending above and below said standpipe nozzle;
- a first set of ports in said standpipe disposed above said standpipe nozzle providing fluid communication between said gas conduit and said inner annular chamber;
- a second set of ports in said standpipe disposed in the upper portion of said outer wall of said standpipe providing fluid communication between inner annular chamber and said outer annular chamber;
- a third set of ports disposed in said standpipe below said standpipe nozzle providing fluid communication between said gas conduit and said outer annular chamber;
- a fourth set of ports disposed to provide fluid communication between said gas conduit and said outer annular chamber;
- means for controlling the flow of fluid through said fourth set of ports; and
- a rupture disc disposed in said gas conduit to seal the fluid in said annular chambers and said gas conduit.

4,436,017

MUZZLE BRAKE FOR ARTILLERY GUNS

Kjell Mohlin, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Feb. 22, 1982, Ser. No. 351,055
Int. Cl.³ F41F 17/12
U.S. Cl. 89—14 C 3 Claims



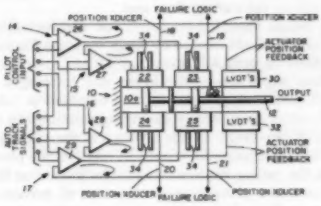
1. A muzzle brake for artillery guns comprising a sidewardly open body attached to the muzzle of the barrel of said gun, said body being defined in the forward direction by a front wall having an outer face provided with a central opening for the gun projectiles, the diameter of said opening being adjusted to the recoil forces initiated by the fire of the gun, the free area of said opening including an exchangeable wear ring axially slid into said opening and attached to the outer face of said front wall of said body.

4,436,018

MULTIPLE LOOP CONTROL SYSTEM

Milford R. Murphy, Arlington, and Delbert E. Haskins, Irving, both of Tex., assignors to Textron Inc., Providence, R.I.

Filed Feb. 17, 1981, Ser. No. 234,713
Int. Cl.³ F15B 9/03, 9/09
U.S. Cl. 91—363 A 18 Claims



1. A multiple loop control system providing a single composite output, comprising:
- a plurality of actuators, each actuator receiving at least two separate control signals and generating an output interconnected with the output of all other actuators in the plurality to provide a single composite output;
- a plurality of control loops, at least one connected to each of said actuators, each control loop responsive to an individual input signal and generating one of said control signals to one of the actuators; and
- failure monitoring means connected to each of said actuators and the control loops to monitor the operation thereof, said failure monitoring means including means responsive to a monitor signal from each actuator, and means responsive to the monitor signal from one actuator having a difference from the monitor signals for the other actuators above a first threshold level to generate the disengage signal to one of the actuators for a failure condition, said failure monitoring means further including means for detecting a hard-type failure and inert-type failure and means for generating a disengage signal at a lower threshold level for an inert-type failure than for a hard-type failure.

4,436,019

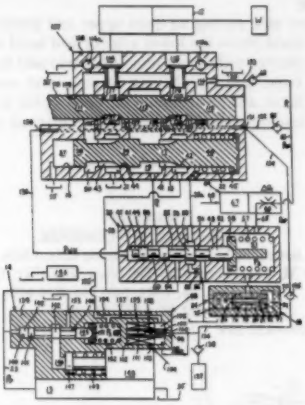
PRESSURE COMPENSATED FLUID CONTROL VALVE

Tadeusz Budzich, Moreland Hills, Ohio, assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed Aug. 20, 1981, Ser. No. 294,606
The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.
Int. Cl.³ F15B 13/04
U.S. Cl. 91—446 32 Claims

12. A valve assembly supplied with pressure fluid by a pump, said valve assembly comprising a housing having an inlet chamber, a supply chamber, first and second load chambers and exhaust means connected to reservoir means, first valve means for selectively interconnecting said load chambers with said supply chamber and said exhaust means, first control orifice means responsive to movement of said first valve means and operable to meter fluid flow between said supply chamber and said load chambers, second control orifice means responsive to movement of said first valve means and operable to meter fluid flow between said load chambers and said exhaust means, positive load fluid throttling means between said inlet chamber and said supply chamber, negative load fluid throt-

tling means between said load chambers and said exhaust means, single pilot valve means operable through said positive load fluid throttling means to throttle fluid flow from said inlet chamber to said supply chamber and also operable through said negative load fluid throttling means to throttle fluid flow from said load chambers to said exhaust means to maintain a constant pressure differential at a preselected constant level



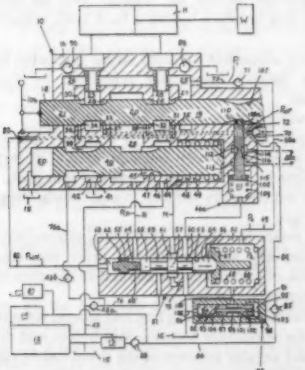
across said pilot valve means and to maintain a constant pressure differential across said first and said second control orifice means, and valve means having means operable through said positive and said negative load fluid throttling means to vary the level of said constant pressure differential across said first and said second control orifice means while said pressure differential across said pilot valve means remains constant at said constant predetermined level.

4,436,020

DUAL INPUT PRESSURE COMPENSATED FLUID CONTROL VALVE

Tadeusz Budzich, Moreland Hills, Ohio, assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed Mar. 11, 1982, Ser. No. 357,036
Int. Cl.³ F15B *13/04*
U.S. Cl. 91—446 **10 Claims**



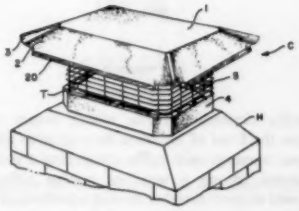
1. A control valve assembly operable to control fluid flow to and from a fluid motor subjected to a load, said valve assembly having first valve means operable to meter fluid flow of said motor, throttling control means operable to throttle fluid flow of said motor, pilot valve means having means responsive to a load pressure related control signal and operable through said throttling control means to maintain a relatively constant pressure differential at a preselected constant level across said pilot valve means and to maintain a constant pressure differential across said first valve means during control of said load, and controller means having means responsive to displacement of said first valve means and means operable to modify said load pressure related control signal, whereby the level of said constant pressure differential acting across said first valve means can be varied in respect to displacement of said first valve means while said pressure differential across said pilot valve means remains constant at said constant predetermined level.

4,436,021

CHIMNEY CAP

Durward A. Hisey, St. Louis, Mo., assignor to HY-C Company Inc., St. Louis, Mo.

Filed Mar. 12, 1982, Ser. No. 357,733
Int. Cl.³ F23J *13/08*
U.S. Cl. 98—67 **9 Claims**



1. In a chimney cap for use in providing coverage for the upper end of the formed chimney flue and thereby preventing the entrance of any extraneous elements therein, comprising, a cover means provided upwardly of the chimney flue and preventing the entrance of rain or other elements downwardly into the chimney flue, a band means arranged downwardly of the said cover means and designed for proximity fitting upon the said chimney flue, said cover and band means being spaced apart a distance heightwise to allow sufficient draft to develop and remove smoke and fumes from the chimney flue, a foraminous means arranged connecting with both the said cap and band means and disposed spanning the space in between the said means and arranged substantially in alignment with the said band means, and retention means operatively associated with the said band means for assuring its securement with the chimney flue upon which it seats, said retention means including at least one adjustable fastener securing with the band means and capable of tightening into binding engagement with the chimney flue, said retention means including a flexible strap being attached interiorly of the band means, said strap capable of being forced inwardly during chimney cap adjustment, and fastening means incorporated within the retention means and when adjusted binding against the flexible strap for forcing it further inwardly for binding engagement with the chimney flue.

4,436,022

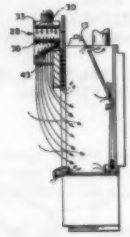
FUME HOOD INCORPORATING HIGH EFFICIENCY AUXILIARY AIR PLENUM

Jon A. Zboralski, Manitowoc; Harry N. Grow, Two Rivers, and Stephen E. Holschbach, Manitowoc, all of Wis., assignors to Hamilton Industries, Inc., Two Rivers, Wis.

Filed Aug. 28, 1981, Ser. No. 297,387
Int. Cl.³ F23J *11/00*
U.S. Cl. 98—115 LH **3 Claims**

1. A fume hood comprising a frame including top, rear, and side panels, and an air exhaust opening; a bypass opening on

the front portion of the hood; an auxiliary air housing mounted on the uppermost portion of the front of the hood and extending outwardly therefrom; and an access opening on the rear portion of the auxiliary air housing which is disposed at the bypass opening of said hood; wherein said housing further comprises an auxiliary air supply opening; a primary means for diffusing a downward flow of air from the air supply, said primary means disposed adjacent to the auxiliary air supply opening; a secondary means for diffusing the downward flow of air, said secondary means positioned below the primary means; a tertiary means for diffusing the downward flow of air and directing the passage of said air flow in front of the front portion of the hood, wherein said tertiary means includes a



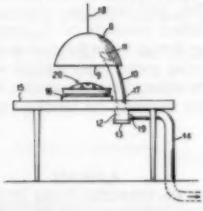
downwardly depending baffle which slopes downwardly away from the front of the hood from an area directly above said bypass opening; said baffle comprising a perforated support member having a layer of porous diffuser material thereon; said support member having a perforated rear portion disposed immediately in front of the upper margin of said bypass opening which is free of said diffuser material; said baffle also including a front portion extending along the lower forward margin thereof providing a second layer of diffuser material; said front portion of said baffle and said rear portion of said support member each having a length constituting a minor portion of the length of said baffle measured from front to rear thereof.

4,436,023

APPARATUS FOR COOKING FOOD AND EXTRACTING SMOKE

Kensuke Takahashi, c/o Kabushiki Kaisha Diamond Hotel, 25, Ichibancho, Chiyodaku, Tokyo 102, Japan

Filed Mar. 25, 1982, Ser. No. 361,983
Int. Cl.³ A47J 37/06
U.S. Cl. 99—400 **17 Claims**



9. An apparatus for cooking food and extracting the smoke produced thereby, comprising:

a table with a hole formed through its surface;

heating means fixed to the table surface;

a grill placed atop said heating means, said grill comprising:

an upwardly convex central body,

a plurality of raised noses formed on the surface of said central body, said noses being directed radially outward from the upper surface of said therein;

a peripheral groove for collecting juices encircling said central body; and

a sidewall encircling said peripheral groove;

a downwardly opening hood for collecting smoke supported above said heating means by means independent of said table;

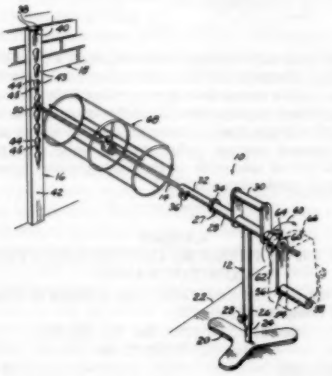
a hollow pipe having an open upper end positioned inside said hood above the lower edge of said hood and a lower end inserted tightly but removably into said hole through said table, said pipe having no structural connection to said hood; and a ventilation duct connected to said lower end leading away from said table to external exhaust.

4,436,024

FIREPLACE ROTISSERIE

Terry D. Arden, 5009 Lunow, Oklahoma City, Okla. 73135, and Robert M. Foglesong, 3115 Del View, Del City, Okla. 73115

Filed Dec. 24, 1981, Ser. No. 334,415
Int. Cl.³ A47J 37/04
U.S. Cl. 99—421 HV **4 Claims**



1. A portable device for cooking over an open fire in a fireplace, said fireplace having a back wall, comprising:

a base;

vertically adjustable standard means supported by said base;

tubular means horizontally supported by said standard means;

a post vertically secured to said back wall,

said post having a plurality of vertically spaced apertures;

a spit extending between and supported at its respective end portions by said tubular means and said post;

a drive rod coaxially secured to said tubular means opposite said spit;

handle means including a hub having internal step diameters respectively surrounding the drive rod equipped end portion of said tubular means and an adjacent intermediate portion of said drive rod;

set screw means including first and second set screws on said hub for selectively securing said hub to said drive rod for manual angular rotation of the drive rod or rigidly securing said hub to said tubular means; and,

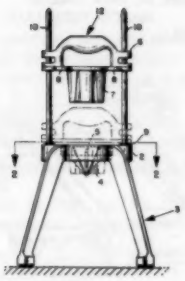
a rotisserie motor drivably connected with said drive rod,

whereby said handle means forms a stop when rigidly securred to said tubular means for preventing angular rotation of said rotisserie motor as a unit about the axis of said drive rod.

4,436,025
SECTIONING DEVICE FOR ROUNDED FOOD ARTICLES

Frank W. Jones, P.O. Box 4074, Greenville, Del. 19807

Filed Apr. 1, 1983, Ser. No. 481,390
Int. Cl.³ A47J 17/00
U.S. Cl. 99—538 11 Claims



1. A device for sectioning a rounded food article comprising a base

a conical cup of internally sharp radial blades mounted in the base and having an apex disposed towards the base with substantially wedge-shaped spaces between the blades,

slide guide means connected to the base,

a plunger having an outer perimeter having slide guide ways located at the outer perimeter of the plunger in which the slide guides engage, the plunger transversing towards the base and returning along the slide guide means,

the plunger having slide guide obstructing tabs attached to the outer perimeter of the plunger adjacent on each side of the slide guide ways causing the plunger to rotate when the plunger is installed inproperly without all the slide guide ways cooperating with the slide guides such that the plunger strikes the base rather than said blades;

an annular array of fingers depending from the plunger which freely engage within the wedge-shaped spaces between the radial blades when the plunger is moved towards the blades, the fingers each comprising a linear element having two ends, one end of each of the fingers being attached to the plunger and the other end being free, the fingers being long enough to substantially pass through the blades when the movement of the plunger into engagement with the base is terminated,

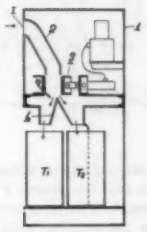
stop means on the base and plunger for terminating their engagement with each other,

a spike having a point and a stem centrally mounted at the central junction of the blades to form their apex disposed within the cup, the point of the spike extending upwardly adjacent the entrance to the cup for holding the article aligned for engagement by the plunger and for initiating the radial splitting of the article which is continued and completed by the blades, the stem of the spike freely terminating a short distance below the cup of blades.

4,436,026
EMPTY CAN CRUSHER

Yoshinobu Imamura; Shigeki Kamei, both of Nishinomiya; Tetuo Yamagata, Kobe, and Hiroshi Fujii, Amagasaki, all of Japan, assignors to Hitachi Kiden Kogyo, Ltd., Hyogo, Japan

Filed Dec. 2, 1981, Ser. No. 326,748
Claims priority, application Japan, Mar. 6, 1981, 56-32908; Jun. 29, 1981, 56-97399[U]; Jun. 29, 1981, 56-97400[U]; Jun. 29, 1981, 56-97401[U]
Int. Cl.³ B30B 9/32
U.S. Cl. 100—45 11 Claims



1. An apparatus for crushing and sorting empty cans, comprising:

a main body frame;

a pressing device, said pressing device including a vertically extending back pressure plate, a vertically extending pressing plate horizontally spaced from and confronting said back pressure plate, and means, including a hydraulic cylinder, for linearly moving said pressing plate horizontally toward and away from said back pressure plate between a first position horizontally spaced from said back pressure plate a distance greater than the diameter of the empty can to be crushed and a second position horizontally spaced from said back pressure plate a distance substantially less than the diameter of the empty can to be crushed;

an empty can supporting bar pivotally mounted to said frame at said back pressure plate for vertically supporting the empty can between said back pressure plate and said pressing plate during movement of said pressing plate toward said back pressure plate;

a magnet embedded in said pressing plate for holding a magnetically attractive crushed empty can to said pressure plate when said pressing plate is moved away from said back pressure plate;

means for separating the magnetically attractive crushed empty can from said pressing plate after said pressure plate has moved away from said back pressure plate to a third position whereby the magnetically attractive crushed empty can falls downward under the influence of gravity;

an empty chute for delivering an empty can to a position between said back pressure plate and said pressing plate when said pressing plate is in said first position; and

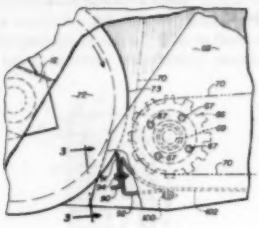
a forked sorting chute located in said main body frame below said pressing device defining a first path below said first position and a second path below said third position, said forked sorting chute respectively directing magnetically non-attractive and magnetically attractive crushed empty cans falling from said pressing plate to separate locations along first and second paths.

4,436,027

STRIPPER BAR FOR ROLL BALING MACHINE

John H. Freimuth, New Holland, and Willis R. Campbell, Ephrata, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Apr. 28, 1982, Ser. No. 372,778
Int. Cl.³ B30B 5/04
U.S. Cl. 100—88 5 Claims



1. In a roll baling machine having a base frame, a rear frame pivotally connected to said base frame, a floor roller rotatably supported on said frame, bale forming means supported on said base and rear frames cooperating with said floor roller to define a bale chamber for forming a roll bale of crop material, said rear frame being pivotally movable between a lower position for formation of a roll bale in said bale chamber and an upper position for discharge of a roll bale from said bale chamber, the improvement comprising:

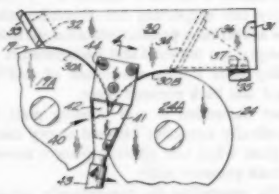
a stripper bar mounted on said rear frame for removing crop material from said floor roller during formation of a roll bale in said bale chamber, said stripper bar having an edge located proximate to said floor roller when said rear frame is in said lower position.

4,436,028

ROLL MILL FOR REDUCTION OF MOISTURE CONTENT IN WASTE MATERIAL

David M. Wilder, 82061 Lost Valley La., Dexter, Oreg. 97431

Filed May 10, 1982, Ser. No. 377,262
Int. Cl.³ B30B 3/04
U.S. Cl. 100—121 6 Claims



1. A two roll press machine for removing moisture from organic material, said machine comprising in combination,

a machine base,

a first roll rotatably mounted on said base and coupled to a roll driving motor and rotatable about a fixed axis,

a second roll,

a carriage slidably mounting said second roll on said machine base enabling travel of said second roll into and out of linear contact with said first roll,

retention means confining said carriage for rectilinear travel on said base,

powered means carried by said base and acting on said carriage to urge said second roll into and out of linear contact with said first roll,

barriers located superjacent the corresponding sides of said rolls, and

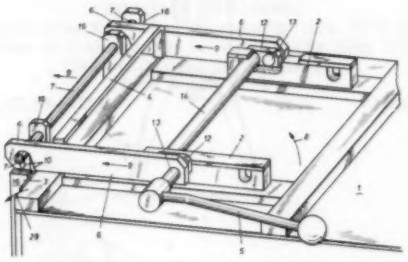
discharge means including collector boxes located laterally adjacent the nip of the rolls to remove collected fluid expelled from the organic material.

4,436,029

DEVICE FOR THE PRESS DOOR OF A BALING PRESS

Albert Goldhammer, Zum Hecht 46, D-7770 Überlingen, Fed. Rep. of Germany

Continuation of Ser. No. 198,965, Oct. 20, 1980, abandoned.
This application Sep. 18, 1981, Ser. No. 303,204
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1979, 2942218; Oct. 18, 1979, 2942229
Int. Cl.³ B30B 15/32
U.S. Cl. 100—250 13 Claims



1. A closure device for a baling press having one end enclosed by a press door, comprising a press door pivotably mounted at its lower end to said baling press, traverse bar means secured to the upper end of said door and for holding said door against said baling press, lever means fixably secured to an end of an eccentric member, the eccentric member having its opposite end rotatably coupled to the baling press, and a pivotable closure beam having one end rotatably connected to said lever means and the other end of the beam having a guide opening inclined at an angle to the vertical such that the guide opening is inclined opposite the direction of closure of said press door, the traverse bar means being received in the guide opening for holding said door against said baling press, whereby rotation of said lever means in a closure direction effects rotation of said eccentric member and a corresponding pivotable movement of the beam end rotatably connected to said lever such that the inclined guide opening is displaced towards said baling press to secure said door to the baling press.

4,436,030

MATERIAL COMPACTOR UTILIZING A POWER TRANSMISSION MECHANISM

John A. Ciciora, Denver, Colo., assignor to Nelson & Johnson Engineering, Boulder, Colo.

Division of Ser. No. 80,741, Oct. 1, 1979, Pat. No. 4,353,263.
This application Aug. 11, 1982, Ser. No. 407,199
Int. Cl.³ B30B 1/00
U.S. Cl. 100—268 9 Claims

1. A material compacting apparatus comprising:

a frame;

means, movably mounted on said frame, for compressing said material;

means, mounted adjacent said frame, for driving said compressing means; and

a coupling drive comprising:

a shaft;

a first arbor journaled on said shaft;
a second arbor journaled on said shaft; and

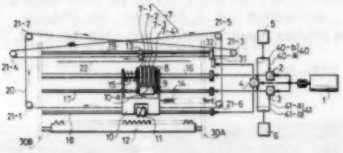
engaging means, associated with said arbors and said shaft, for engaging said first or second arbors with said shaft in response to the direction of rotation of said shaft.

4,436,031

SERIAL PRINTER

Fumihisa Hori, Tamayama, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1981, Ser. No. 334,544
Claims priority, application Japan, Dec. 27, 1980, 55-185990
Int. Cl.³ B41J *1/50*
U.S. Cl. 101—93.17 **8 Claims**



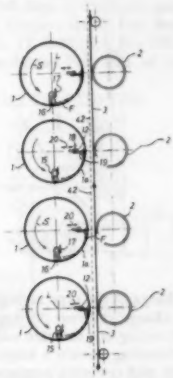
1. A printer including a carriage adapted to be moved along a line to be printed and carrying a holder containing a plurality of circumferential rows of type elements, impact means including a hammer movable along the line to be printed in unison with said carriage for pressing a record medium between said hammer and a selected one of said type elements placed in a printing position along the line to be printed, and selection means for selectively sliding said rows of type elements laterally within said carriage for bringing a selected one of said rows into said printing position, said selection means including a rotary cam carried by said holder and including spiralling cam portion and a return cam portion, a guide portion held to said carriage and adapted to engage said cam portions and means including a cam shaft connected to said cam for rotating said cam so that said guide portion can slide along said cam portions to shift said holder laterally from its home position within said carriage to selectively bring said rows into said printing position and then return said holder to its home position within said carriage by rotating said shaft in a single direction, means including a type shaft extending thorugh said rows of type elements for rotating them to bring a selected angular position of said rows along said printing position, means including a column shaft for shifting said carriage along the line to be printed, means including a single motor for providing motive power to each of said cam shaft, said rotary shaft and said column shaft, means including a first clutch for transmitting motive power selectively from said motor to said type shaft, means including a second clutch for transmitting motive power selectively from said motor to said cam shaft, and means including a third clutch for transmitting motive power to said column shaft when said first and second clutches are not transmitting motive power to said type shaft and said cam shafts respectively.

4,436,032

ROTARY SCREEN PRINTING APPARATUS

Wouter C. van Ouwerkerk, Hengelo, Fed. Rep. of Germany, assignor to Saueressig GmbH, Ahaus-Wüllen, Fed. Rep. of Germany

Filed Jan. 19, 1982, Ser. No. 340,833
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1981, 3101766
Int. Cl.³ B41L *41/00, 13/18*
U.S. Cl. 101—120 **11 Claims**



1. A rotary screen printing apparatus for printing dye on a web of material, said apparatus having at least one cylindrical screen printer with a lower portion and an inner side for which dismantling is avoided to undertake dye change quickly at minimum cost while also minimizing any possible dye losses, which includes centrally therein:

supply and withdrawal means at the lower portion of said screen printer that selectively supplies or withdraws dye, said pipe means being connected to a source of dye for supplying dye over the width of that portion of the inner side of said screen printer which at any given time is the lower portion thereof, and also for withdrawing dye therefrom; said pipe means for supplying and withdrawing dye being provided with at least one aperture over its length being directed on the screen printer and arranged approximately in the immediate vicinity of the inner lower side of said screen printer and being selectively connectible with a dye conveying pump to supply dye and a dye withdrawal pump selectively to remove excess quantities of dye from said screen printer so that undesired passage of dye through the screen printer is avoided during standstill thereof; means for guiding a web material to be printed on vertically past said screen printer so that during the printing procedure the web of material engages tangentially against the screen printer and unwanted or unused dye reaching the web of material including any final dye residue, is drained and/or withdrawn from the lower inside portion of the screen printer to facilitate cleaning thereof; and

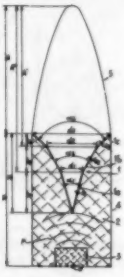
a squeegee device which, when viewed in the direction of rotation of said screen printer, is spaced from said pipe means for supplying the dye that the squeegee device pushes through the screen printer and is positioned so that excess dye is accummulated between the squeegee device and the lower portion of said screen printer and drains or runs off along said screen printer for recovery therefrom via said pipe means.

4,436,033

HOLLOW CHARGES WITH PLURAL CONICAL CONFIGURATIONS

Michel Precoul, Paris, France, assignor to Societe d'Etudes, de Realisations et d'Applications Techniques (SERAT), Paris, France

Filed Jul. 28, 1981, Ser. No. 287,547
Claims priority, application France, Aug. 6, 1980, 80 17341
Int. Cl.³ F42B *1/02*
U.S. Cl. 102—307 18 Claims



1. In a hollow charge of the type including a main explosive charge, a priming charge at a rear portion of said main explosive charge, and covering at a forward end of said main explosive charge, said covering having a longitudinal axis, the improvement wherein said covering comprises:

plural covering stages disposed sequentially from a rear end to a forward end of said covering;

each said stage having a conical configuration which converges toward said rear end of said covering and which defines with a plane extending longitudinally through said axis a pair of rectilinear slopes converging toward said rear end of said covering;

the apical angles defined by said pairs of rectilinear slopes increasing from said rear end of said covering to said forward end thereof; and

rectilinear extensions of said slopes of adjacent said stages intersecting.

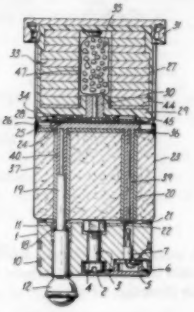
4,436,034

SMOKE GRENADE WITH SUCCESSIVE SLOW AND FAST BURNING CHARGES

Kjell O. Jacobsen, Raufoss; Tore Matre, Osterås; Rolf I. Halvorsen, Boverbru; Ingar H. Heie, Raufoss; Erling Myhrvold, Raufoss, and Ove R. Berger, Raufoss, all of Norway, assignors to A/S Raufoss Ammunisjonsfabrikker, Raufoss, Norway

Filed May 5, 1981, Ser. No. 260,827
Int. Cl.³ C06D *3/00*
U.S. Cl. 102—334 2 Claims

1. A smoke shell for successively discharging a fast burning smoke emitting charge and a slow burning smoke emitting charge comprising a steel casing, an inner casing positioned in the upper part of the said steel casing and enclosing an upper instantaneous fast burning smoke emitting charge in the form of a series of annular disc rings, and an ignition bursting charge disposed in the central lower end of the steel casing ignition means for igniting said bursting charge, a first stooping fuse in the lower part of the steel casing leading from the ignition means and extending upwardly through said slow burning charge, an ejector charge a delay charge for controlling the ignition of the ejector charge for the instantaneous fast burning charge, a second delay charge disposed in the inner casing for igniting the ignition bursting charge for the instantaneous fast burning charge, a third delay charge and a second stooping fuse disposed in a contact head leading from the ignition means to the ejector charge for ejecting the said shell with its slow burning charge, the delay time of the first stooping fuse from the ignition means up to the perforated cover being shorter than the combined burning times of the third delay charge and of the second stooping fuse together, which lead from the



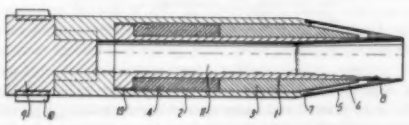
ignition means to the ejector charge, for ejecting the steel shell with its slow burning charge in a delayed time period after the inner casing with its fast burning charge has been ejected.

4,436,035

TUBULAR PROJECTILE

Kaare R. Strandli, Raufoss, Norway, assignor to A/S Raufoss Ammunisjonsfabrikker, Raufoss, Norway

Continuation of Ser. No. 112,475, Jan. 16, 1980, abandoned. This application Jun. 3, 1982, Ser. No. 384,638
Claims priority, application Norway, Jun. 16, 1979, 790148
Int. Cl.³ F42B *11/24*
U.S. Cl. 102—364 5 Claims



1. A tubular projectile having a rear end with a sabot and an open front end, characterized in that is comprises an interior and an exterior cylindrical wall, concentrically arranged, between which at least one incendiary charge is provided in front of at least one explsoive charge, as seen in the moving direction of said projectile, the incendiary charge being constructed to ignite on impact and then to ignite the explosive charge after a predetermined delay, and including a cover in front of said incendiary charge, said cover being a separate piece from the interior and exterior walls, and having a portion which is thinner and more deformable than the interior and exterior walls, said cover being firmly secured to the forward end of the interior and exterior walls.

4,436,036

PROJECTILE FOR DISPENSING GASEOUS MATERIAL

Frank H. Bell, Brigham City, Utah, assignor to Thiokol Corporation, Chicago, Ill.

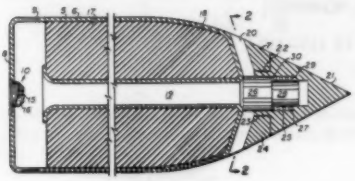
Division of Ser. No. 80,359, Sep. 28, 1979, Pat. No. 4,353,303, which is a continuation-in-part of Ser. No. 888,120, Mar. 20, 1978, abandoned. This application Jul. 28, 1982, Ser. No. 402,498
Int. Cl.³ F42B *13/46*
U.S. Cl. 102—367 7 Claims

1. A projectile for dispensing gaseous materials comprising:

a closed, hollow, substantially cylindrical housing located at a rear portion of the projectile and having an aerodynamic forward surface forming a front portion of the projectile, said forward surface having an aft end;

a central venturi tube having one end fixed inside the housing to a portion of the housing at the forward end thereof that is adjacent the aft end of said forward surface and extending aftwardly into said housing to form an annular space therein;

means in said substantially cylindrical housing and located adjacent the aft end of said forward surface for venting the forward end of the venturi tube to the external environment at an area of maximum turbulence about said projectile;



material to be dispensed located in and completely filling the annular space in said housing surrounding the venturi tube, said material being capable of being gasified;

means for retaining said material in said annular space in said housing;

means for releasing said material from said annular space in said housing in the form of a gas; and

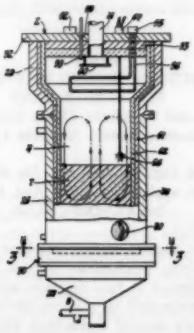
spring-loaded valve means located at the forward end of the venturi tube for normally closing the venturi tube and for maintaining a predetermined operating pressure within the projectile.

4,436,037

CONTINUOUS IGNITION SOURCE FOR CONTROLLED DISPOSAL OF COMBUSTIBLE POLYMER WASTE IN A FLUIDIZED BED REACTOR

Hong-Hsiang Kuo, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 21, 1982, Ser. No. 370,457
Int. Cl.³ F23G *5/00, 7/00*
U.S. Cl. 110—245 **4 Claims**



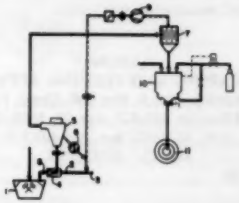
1. In a fluidized bed reactor suitable for burning paint sludge having an acrylic polymer constituent the improvement comprising a point source of heat maintained at a temperature above the ignition temperature of the polymer constituent, said source being located in the reactor such that it is immersed in the fluidized bed, the presence of said heat source serving to initially and continuously ignite the acrylic paint component of the sludge and prevent the accumulation of explosive amounts of reaction products within the reactor wherein said point source of heat is an electrically heated glow plug.

4,436,038

METHOD OF PREPARING PULVERIZED FUEL WITHDRAWN FROM A PRIMARY FUEL FLOW FOR A PULVERIZED FUEL PILOT LIGHT BY MEANS OF A SIFTER DEVICE OR A SUPPLEMENTAL PULVERIZING PLANT

Klaus Leikert, Gummersbach, and Klaus-Dieter Rennert, Marienheide, both of Fed. Rep. of Germany, assignors to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Feb. 12, 1982, Ser. No. 348,252
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1981, 3105626
Int. Cl.³ F23D *1/00*
U.S. Cl. 110—347 **5 Claims**



1. A method of preparing pulverized ignition fuel for igniting a pulverized-fuel annular burner flame having an internal back flow region, with the ignition energy for said annular burner flame being introduced centrally into the interior of the back flow region of the annular burner flame, said method comprising the steps of:

supplying said burner with a pulverized fuel/carrier air mixture from a pulverizing plant via a primary fuel conduit;

providing a pilot light for furnishing said ignition energy, said pilot light being operated with pulverized ignition fuel having at least one of the characteristics of coarseness and consistency/different from the same characteristic of said primary fuel;

withdrawing said pulverized ignition fuel for said pilot light from said primary fuel conduit through the opening of a withdrawal device which is capable of being shut off;

processing said withdrawn pulverized ignition fuel prior to supplying same to said pilot light; and

directing said withdrawal opening of said withdrawal device counter to the flow in said primary fuel conduit.

4,436,039

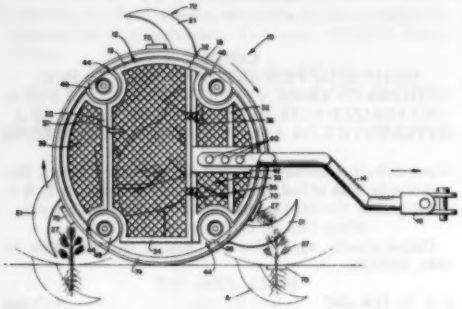
ROLLING DRUM TREE PLANTER

Marion A. Stephens, Jr., 1749 Ivan Clyde Dr., Bogalusa, La. 70427

Filed Jul. 19, 1982, Ser. No. 399,247
Int. Cl.³ A01C *11/02*
U.S. Cl. 111—2 **11 Claims**

1. Apparatus for planting a tree or other plant comprising: a carriage assembly having an opening at least in the forward portion thereof; means for accommodating a human operator of the apparatus in a non-rotating position within said carriage; a cylindrical drum mounted for rotation about the circumference of the carriage; at least one soil penetrating implement attached to the exterior of the drum; and a slot located in the drum adjacent said soil penetrating implement, said slot being

aligned with the opening in the carriage during rotation of said drum to allow a plant to be positioned in said slot by the operator for insertion in the ground after contact with the ground is made by the soil penetrating implement.



4,436,040

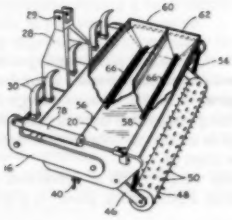
LANDSCAPING AND SEEDING APPARATUS

William M. Chumley, Rte. 6, Box 600, Greer, S.C. 29651

Continuation of Ser. No. 144,427, Apr. 28, 1980. This application Aug. 20, 1982, Ser. No. 409,968

Int. Cl.³ A01C *7/08*

U.S. Cl. 111—10 **22 Claims**



1. A multi-purpose lawn landscaping device for use on a tractor hitch capable of raising and lowering the device, said landscaping device comprising:

(a) a support frame;

(b) means securing said frame to said tractor hitch adjacent one end of said frame;

(c) an elongate transversely disposed pan having a ground scraper blade adjacent a front portion of said pan facing toward said tractor hitch;

(d) means mounting said pan on said frame adjacent the other end of said frame for pivotal movement about a longitudinal axis of said pan between a first position wherein said pan is generally horizontally disposed, and a second position wherein said pan is generally upright with said scraper blade extending downwardly for engagement with the ground;

(e) a fluid motor having pivotal connection on said support frame on one end thereof and on said pan on the other end thereof and on said pan on the other end for moving said pan between said second position wherein said scraper blade is in engagement with the ground to remove soil therefrom, and said first position wherein said pan is generally horizontally disposed to transport removed soil therein; and

(f) backfill means comprising an elongate blade extending along the length of the pan and pivotally attached to a forward undersurface portion thereof for movement between a rearwardly extending inoperative position when said pan is in said first position, and a downwardly extending operative position for engagement with the ground when said pan is in said second position and said pan is moved rearwardly across the ground.

4,436,041

ATTACHMENT FOR FEEDING REINFORCING BACK BUTTONS TO A SEWING MACHINE

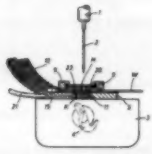
Hermann Taddicken, Schwäbisch Gmünd, Fed. Rep. of Germany, assignor to Eisele Apparate-und Geratebau GmbH, Fed. Rep. of Germany

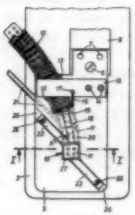
Filed May 3, 1982, Ser. No. 374,474

Claims priority, application Fed. Rep. of Germany, May 13, 1981, 8114009[U]

Int. Cl.³ D05B *3/14*

U.S. Cl. 112—110 **7 Claims**





1. An attachment for feeding reinforcing back buttons to a sewing machine having a feed for main buttons to a button clamp which is positionable over the work material which is moved through a sewing station, comprising a plate member over which the material is set having a button chute guide groove defined thereon terminating in a button recess having a button aligning stop edge at the end thereof, and a back button feed chute connected to said plate for feeding back buttons in succession into said recess against said aligning stop edge.

4,436,042

DUAL FUNCTION SEWING MACHINE WITH A ROTATABLE BASE

Susumu Hanyu, and Yoshikazu Ebata, both of Tokyo, Japan, assignors to Janome Sewing Machine Co. Ltd., Kyobashi, Japan

Filed Aug. 16, 1982, Ser. No. 408,658

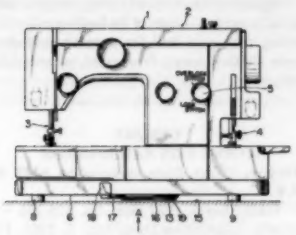
Claims priority, application Japan, Aug. 31, 1981, 56-135436

Int. Cl.³ D05B *75/06*

U.S. Cl. 112—217.1 **7 Claims**

1. In a double-function sewing machine having a machine body, lock stitching mechanism and an overlock stitching mechanism positioned at two opposite sides of the machine body, and feet positioned on a lower surface of the machine body and abutting against a machine mounting surface on which the machine is positioned, a switching device for switching the positions of the lock stitching mechanism and the overlock stitching mechanism comprising rotating switching means disposed on said lower surface of the machine body and including a rotatable operating member, a base disc operatively connected to said operating member and adapted to move in a vertical direction with respect to said lower surface upon rotation of said operating member between a rest position in which said base disc is above the machine mounting surface and an operating position in which said base disc projects

downward farther than said feet to contact said machine mounting surface, whereby the machine body is lifted from the



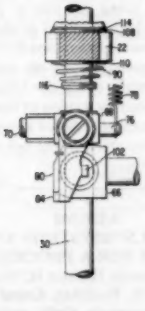
machine mounting surface and may be rotated in a horizontal plane to place a required one of said stitching mechanisms to a use position.

4,436,043

GATE BRACKETING CUSHIONING SPRING ARRANGEMENT FOR A SEWING MACHINE

Edilberto Cantada, East Brunswick, N.J., assignor to The Singer Company, Stamford, Conn.

Filed May 7, 1982, Ser. No. 375,922
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—221 **2 Claims**



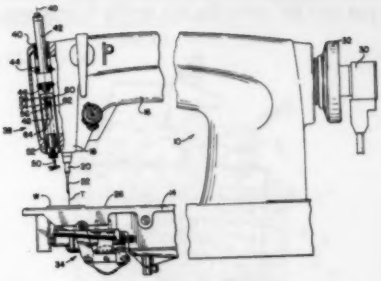
1. In a sewing machine, a needle bar, a movable gate with a bearing therein in which the needle bar is supported for endwise reciprocation, latching means carried on the needle bar, actuating means for imparting endwise reciprocatory motion to the needle bar through said latching means, means for unlatching the latching means from said actuating means, elevating spring means for raising the needle bar when unlatched from the actuating means, a fixed member on the needle bar, and a cushioning spring clipped with upper end gate bracketing coils onto the gate structure in a coaxial position with respect to the needle bar for engagement by said fixed member when the needle bar is raised by the elevating spring means, the said bearing being located in an arm on the gate for the needle bar, the bearing being encircled and gripped on an upper side of the arm by one of the coils of the cushioning spring, and the the other coils of the spring being located under the arm.

4,436,044

THREAD WIPING DEVICE

Eric W. Nordstrom, Forest Park, and Laurence A. Manoski, Mt. Prospect, both of Ill., assignors to Union Special Corporation, Chicago, Ill.

Filed Sep. 18, 1981, Ser. No. 303,649
Int. Cl.³ D05B *65/06*
U.S. Cl. 112—286 **8 Claims**



1. In a sewing machine having a stitching mechanism including an eye pointed thread carrying needle means operable along a straight line path during the sewing operation, mechanism for securing the loose end of a sewing thread during the initial operation of the stitching mechanism comprising:

spindle means arranged for movement about a fixed axis extending generally parallel to the path of the needle means with an annular bearing projecting transversely therefrom;

thread engaging element means arranged at one end of said spindle means;

a sleeve provided with an anfractuous slot whose side edges tangentially engage and positively guide said bearing to rotate the spindle means and thereby the thread engaging element means outward and back along identical paths; and

means for reciprocating the spindle means whereby moving said element through a helical path extending generally parallel to the needle's path with a segmented portion of said helical path crossing the needle thread path below the eye pointed needle.

4,436,045

DIFFERENTIAL FEED MECHANISM FOR SEWING MACHINES

Richard T. Bonham, Oak Park; John P. Sigiols, Chicago, and Paul H. Dinkelacker, Hillside, all of Ill., assignors to Union Special Corporation, Chicago, Ill.

Filed May 14, 1982, Ser. No. 378,147
Int. Cl.³ D05B *27/08*
U.S. Cl. 112—313 **3 Claims**

1. In a sewing machine having a frame, a main drive shaft, reciprocatory needle means, and a differential feed mechanism comprising:

first and second feed dog carrier means arranged side by side and supported for oscillatory and reciprocatory movements relative to said frame;

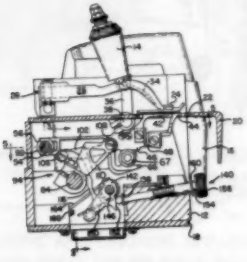
means for interconnecting said first and second feed dog carrier means to permit relative horizontal movement between said carrier means and to prevent relative vertical movement of said bars;

eccentric drive means arranged on said drive shaft for imparting simultaneous vertical movement of said first and second feed dog carrier means;

first operative means interconnecting the drive shaft and said first feed dog carrier means for effecting reciprocatory horizontal movement of said first feed dog carrier means;

second operative means interconnecting the drive shaft and said second feed dog carrier means for effecting reciprocatory horizontal movement of said second feed dog carrier means;

each of said first and second operative means includes a means for converting the rotational movement of the drive shaft into oscillatory motion, a driving lever connected to said motion converting means to be oscillated thereby along a predetermined oscillatory path, linkage means including two interconnected and substantially equal links for connecting said driving lever to said feed



dog carrier means for imparting reciprocatory horizontal movements thereto;

a first adjustment means communicating with said first operative means for varying the extent of reciprocatory horizontal movement of said first feed dog carrier means by controlling the oscillatory path of the driving lever of said first operative means; and

a second adjustment means communicating with said second operative means for varying the extent of reciprocatory horizontal movement of said second feed dog carrier means by controlling the oscillatory path of the driving lever of said second operative means.

4,436,046

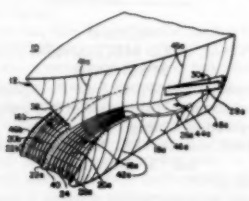
ICE-BREAKING HULL

William W. Braley, 21 Arrowhead Trail, Media, Pa. 19063

Filed Feb. 1, 1982, Ser. No. 344,360

Int. Cl.³ B63B *35/12, 35/08*

U.S. Cl. 114—42 **12 Claims**



1. An icebreaker for forming substantially ice-free channel of water through an ice mass by breaking up a portion of the ice mass into fragments comprising:

a hull, including a forwardly and upwardly sloping stem;

a pair of ramps having first and second longitudinally sloped surfaces rigidly connected to and partially surrounding a portion of said hull for substantially removing said ice fragments from said water and depositing them on the remaining ice mass on either side of said channel, each of said ramps extend forward of said stem and have a longitudinally oriented trough formed by their upper surfaces,

cutting edges molded to said stem and to inboard and outboard sides of said ramps which form the sides of said troughs for breaking said ice mass into substantially strips of ice fragments that are removed from the water along said ramps and deposited therefrom on the remaining ice mass on either side of said channel, said stem and cutting edges having an acute angle therebetween, and

a pair of longitudinally oriented sweep means, each having a substantially vertical hinge at its leading edge for pivotally connecting it to said hull for moving said deposited ice fragments further away from said substantially ice-free channels.

4,436,047

BOOM FOR SAILBOARDS

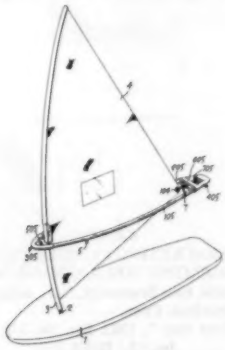
Leonardo Freyrie, Milan, Italy, assignor to AMF Inc., White Plains, N.Y.

Filed May 5, 1982, Ser. No. 375,254

Claims priority, application Italy, May 5, 1981, 12517 A/81

Int. Cl.³ B63H *9/04*

U.S. Cl. 114—102 **6 Claims**



6. A boom for sailboards having a mast and a substantially triangular sail secured along one side to the mast, the boom comprising: two spaced spars joined at their forward ends to each other and to the mast, plate means fastened to the free end of the sail and constrained by the aft ends of the spars for limited motion substantially along the longitudinal axis of the boom, and means actuated by motion of the spars substantially transverse to the longitudinal axis for moving the plate means along the axis to take up slack in the sail that would be produced by such spar motion.

4,436,048

ROTARY TRANSFER SUBSYSTEMS AND TENSIONING ASSEMBLIES FOR A PROCESS VESSEL

Larry L. Gentry, Sunnyvale; Herbert H. Moss, Cupertino, both of Calif.; Narayana N. Panicker, Grand Prairie, Tex., and William T. Wada, Sunnyvale, Calif., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 22, 1982, Ser. No. 391,070

Int. Cl.³ E21B *43/01*

U.S. Cl. 114—230 **20 Claims**

1. A rotary fluid transfer subsystem, for transfer of production fluids, electrical power, hydraulic power, and control signals across a rotating interface between an offshore process vessel and a flowline bundle of service hoses and high-pressure hoses which are connected to a deepwater production riser system, and a tensioning means, for maintaining a selected tension on terminal hoses between said interface and said vessel while said vessel weathervanes during maintenance of position in a watch circle above said riser system, said subsystem and said tensioning means being mounted on said vessel which is equipped with a powered turret within a circular moonpool and is capable of performing most subsea service functions on

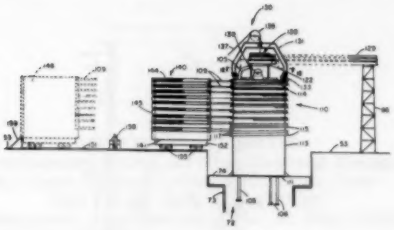
said riser system without major equipment support, said subsystem and said tensioning means, in combination, comprising:

A. a column assembly which is attached to said turret and supports horizontal loops of terminal hoses;

B. a multi-passage swivel for accommodating a portion of said terminal hoses not containing gas;

C. a tower for selectively tensioning said portion of said hoses and for connecting said hoses to production piping;

D. a traveling sheave and drive mechanism which supports



horizontal loops of the remaining portion of said hoses while maintaining tension on and adjusting the lengths of said remaining hoses, between connections to storage facilities in said vessel and said column assembly, while said column assembly remains rotatably stationary with respect to said flowline bundle during said weathervaning of said vessel through at least 270°; and

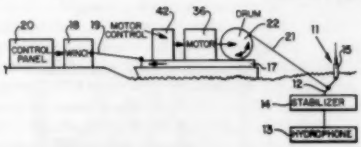
E. hose support trays for supporting horizontal spans of said hoses between said tower and said column and between said column and said traveling sheave.

4,436,049

SIMULATOR FOR TESTING SONOBUOYS

Louis E. Ante; Richard A. Lindquist, and Eugene R. Roeschlein, all of Indianapolis, Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 20, 1982, Ser. No. 380,152
Int. Cl.³ B63B *21/16, 21/52*
U.S. Cl. 114—254 **2 Claims**



1. Apparatus for simulating a sea condition for a sonobuoy being tested in a relatively calm body of water, said sonobuoy comprising a float and a hydrophone connected to said float by an electrical cable comprising:

a floating platform,

means, comprising a winch placed on shore and a cable connecting said winch with said floating platform, for moving said floating platform at a predetermined speed for simulating a sea current,

a drum rotatably mounted on said floating platform,

a motion cable having one end attached to said electrical cable and the other end attached to said drum,

a reversible motor for rotating said drum, and

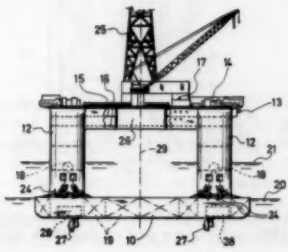
control means for regulating rotation of said reversible motor whereby said motion cable is wound upon said drum and unwound from said drum in a manner to simulate action of sea waves on said hydrophone, said control means comprising a plurality of programmable read-only memories for storing digital voltage values representing sea wave amplitudes and having a selector switch for selecting a desired memory.

4,436,050

SEMI-SUBMERSIBLE VESSEL

Hadar Liden, Västra Frölunda, Sweden, assignor to Gotaverken Arendal AB, Gothenburg, Sweden

Filed Oct. 7, 1981, Ser. No. 309,475
Claims priority, application Sweden, Oct. 23, 1980, 8007434
Int. Cl.³ B63B *35/44*
U.S. Cl. 114—265 **2 Claims**



1. A semisubmersible vessel comprising:

(A) two parallel under-water hulls;

(B) an operating deck shaped as a self-supporting displacement body, having sufficient volume to hold the vessel floating;

(C) two pairs of columns connecting said operating deck with said under-water hulls, and arranged at generally equal distances from each other and at the same distance from a vertical line of symmetry through the vessel;

(D) said operating deck being a multi-deck high box structure rigidly interconnecting the upper ends of said columns and extending downwardly below the upper ends of the columns;

(E) said under-water hulls and said columns being so constructed that said operating deck is located substantially above wave level and said under-water hulls are immersed sufficiently below water level to assure that they are not noticeably affected by wave movements; and

(F) a horizontal stay means interconnecting each set of juxtaposed columns in each of said pairs thereof and arranged transversely to said under-water hulls, just above the decks thereof and below the water level;

(G) the space between said operating deck and said horizontal stay means being free of obstructing cross-braces.

4,436,051

HOISTING AND LOWERING MECHANISM FOR A ROTATABLE MAST

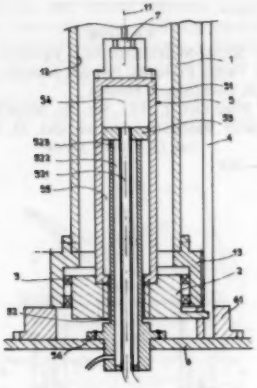
Jacques Nollez, Paris; Jacques Ragain, Domont, and Marc Prevost, Paris, all of France, assignors to Societe d'Optique, Precision Electronique et Mechanique, Sopelem, Levallois-Perret, France

Filed Jan. 28, 1982, Ser. No. 344,271
Claims priority, application France, Feb. 4, 1981, 81 02098
Int. Cl.³ B63G *8/38*
U.S. Cl. 114—340 **4 Claims**

1. Mechanism for hoisting and lowering a rotatable mast for a submarine having a thick hull (6), said mast being guided along its longitudinal axis with respect to said submarine, comprising

(a) a suspension (2) associated with means (3) assuring the vertical connection of said suspension to the lower part of said mast while permitting relative rotation of said suspension and said mast; and

(b) a jack (5) housed rod downward in said mast so that its cylinder (51) is fast to said suspension (2) and so that the



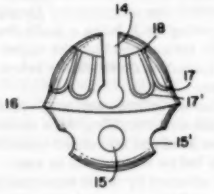
lower end of its rod (52) is coupled through an anchoring point (56) to the upper part of said thick hull (6).

4,436,052

GLOBE-SHAPED BELLS WITH SINGLE-PIECE SHELLS

William R. Schall, Star Rte. Box 137, Apollo, Pa. 15618

Division of Ser. No. 187,395, Sep. 15, 1980, Pat. No. 4,349,065.
This application Jun. 15, 1982, Ser. No. 388,782
Int. Cl.³ G10K *1/07, 1/26*
U.S. Cl. 116—148 13 Claims



1. A globe-shaped or nearly globe-shaped bell, comprising a metal shell with holes extending through the shell, which is molded in only one piece around a readily disintegrative substance forming an inner core; and a ball-bearing or jinglet, which, during the process of casting the shell, is held in place securely in said disintegrative inner core of the shell's mold.

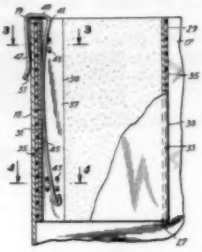
4,436,053

CLIP-ON BOOKMARK

Andre L. Zeisky, 55 W. 14th St., New York, N.Y. 10011

Filed Aug. 12, 1981, Ser. No. 292,282
Int. Cl.³ B42D *9/00*
U.S. Cl. 116—237 15 Claims

1. A clip-on bookmark for a book comprising
a substantially planar marking member having two opposed covers and at least one edge portion,
indicia associated with at least a portion of said covers,
slot means formed by said marking member along said edge portion, and
fastening means received by said slot means for removably fastening said marking member to the book,
wherein said fastening means for fastening comprises a unitary member comprising oppositely positioned first and second legs joined at a reverse bend and having an open side opposite said reverse bend, said first leg being mounted in said slot means and said second leg being mounted outside said marking member, said legs being spring biased one against the other, whereby when the spine of the book is inserted between the second leg and the marking member, the marking member is held in position in part by bias action between the two legs, and
said unitary member being shaped and rotatable about said slot means to move said second leg to an outer position to mark pages of the book and to an inner position to shield said second leg against said marking member, said second



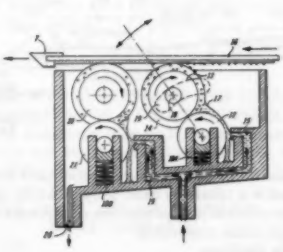
leg being alternatively resiliently biased toward one of said inner and outer positions,
said slot means formed of a resilient plastic material extending along said edge portion, said first leg being inserted between the facing surfaces of said slot means bowing said facing surfaces to accommodate said first leg, said first leg comprising means to bear against said facing surfaces, said facing surfaces resiliently biased against said means to bear of said first leg to resiliently maintain said second leg in said inner and outer positions.

4,436,054

XEROGRAPHIC TONER CLEANING STATION

Theodorus M. Ceelen, LaVerne; Lothar S. Jeromin, Sierra Madre, and Lamont R. Wright, Pasadena, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 23, 1982, Ser. No. 410,666
Int. Cl.³ G03G *21/00*
U.S. Cl. 118—652 6 Claims



1. In a system for the development of a xerographic image comprising a reservoir of cleaning liquid,
a cleaning station for the removal of toner particles from a xerographic plate after the image has been developed comprising:
a cylindrical cleaning roll comprising a foam outer covering adapted to rotate in contact with said plate to remove said toner particles from said plate,
a cylindrical donor roll in contact with said cleaning roll at a nip, said donor roll being rotationally driven by said cleaning roll,

means for delivering a flow of cleaning liquid to the surface of said donor roll at a point where the rotation of said donor roll will pull said liquid into the nip, creating there a standing wave of liquid,

drain means for returning the cleaning liquid which flows downward from said standing wave into said reservoir, and

means for rotating said cleaning roll.

4,436,055

DEVELOPING APPARATUS

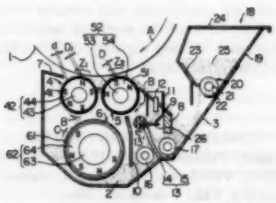
Keitaro Yamashita, Saitama, and Hiromi Kashiwagi, Kumagaya, both of Japan, assignors to Hitachi Metals, Ltd., Japan

Filed Mar. 11, 1982, Ser. No. 357,295

Claims priority, application Japan, Mar. 20, 1981, 56-39543; Mar. 26, 1981, 56-43169

Int. Cl.³ G03G *15/09*

U.S. Cl. 118—658 **4 Claims**



1. A developing apparatus comprising an image carrier member carrying an electrostatic latent image on a surface thereof; a plurality of developing rolls disposed in opposition to said image carrier member with developing gaps being formed therebetween, each of said developing rolls being formed therebetween, each of said developing rolls being composed of a rotatable cylindrical sleeve made of a non-magnetic material and a permanent magnet member disposed stationarily within said sleeve and having a plurality of magnetic poles formed in the peripheral surface, wherein at least one of said magnetic poles of each of said permanent magnet members is disposed in opposition to the associated one of said developing gaps so that magnetic brushes are formed on the surfaces of the sleeves at said developing gaps when a magnetic developer is transferred between the adjacent sleeves upon rotation of said sleeves in a same direction, said image carrier member being frictionally swept by said magnetic brushes; a developer container for supplying said magnetic developer to said developing rolls; a doctor blade member for controlling a quantity of said magnetic developer supplied to said developing gaps; and a scraper member for scraping off the magnetic developer after having passed through said developing gaps; wherein the magnetic poles of the adjacent developing rolls which are positioned in opposition and closest to each other are magnetized in polarities opposite to each other, and the magnetic pole on a magnetic developer receiving side of said oppositely positioned magnetic poles is displaced in a direction opposite to the rotating direction of the associated sleeve from a position at which said adjacent developing rolls come closest to each other thereby producing a magnetic coupling having a direction which is inclined between said oppositely positioned magnetic poles.

4,436,056

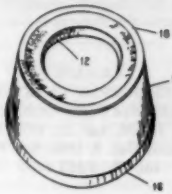
SPILL-RESISTANT PET ANIMAL DISH

Norman J. MacLeod, 730 Franklin Rd. K-1, Marietta, Ga. 30067

Filed Jul. 19, 1982, Ser. No. 399,458

Int. Cl.³ A01K *5/00*

U.S. Cl. 119—72 **9 Claims**



1. A spill-resistant container for an animal which comprises:

(a) a bowl and lid therefor, the lid having an aperture to permit access by the animal to liquid within the bowl; a segment of the lid having an outside shape to conform to a portion of the interior surface of the bowl; the lid having a wall section which extends generally inward and downward from the lower edge of said segment, the wall section being adapted to change the direction of a liquid advancing generally upward along the interior surface of the bowl and to direct it away from the aperture; and

(b) the bowl having a floor elevated above the lowermost portion of said interior surface and an inclined section, the upper surface of which extends generally outward and downward from the outer periphery of the floor, so that the lower portion of the bowl forms a depression surrounding the floor, the inclined section being adapted to create undercurrents within the liquid as it is being moved to oppose any forces tending to push it upward along the interior surface of the bowl.

4,436,057

METHOD AND APPARATUS ENABLING THERMAL ENERGY RECOVERY IN COMBUSTOR OPERATION

Henry F. Cross, Rickmansworth, and Maurice Harman, Milton Keynes, both of England, assignors to Energy Equipment Co. Ltd., Bedfordshire, England

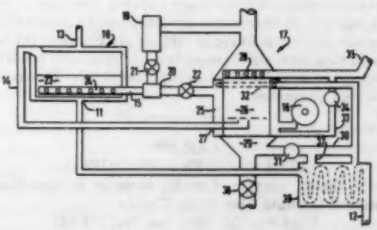
PCT No. PCT/GB80/00101, § 371 Date Feb. 10, 1981, § 102(e) Date Feb. 10, 1981, PCT Pub. No. WO80/02868, PCT Pub. Date Dec. 24, 1980

PCT Filed Jun. 6, 1980, Ser. No. 237,144

Claims priority, application United Kingdom, Jun. 15, 1979, 7920965

Int. Cl.³ F23G *5/02*; F22B *1/02*

U.S. Cl. 122—4 D **5 Claims**



1. A method of operating heating apparatus including a fluidised bed of inert particulate material to which gas is fed to fluidise the bed and support combustion of fuel fed thereto, the method comprising using a mixture of air and recycled flue gas

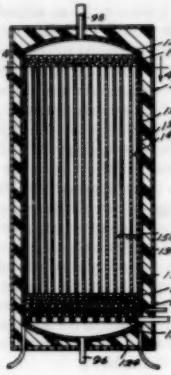
the proportions of which may be varied to fluidise the bed of inert particulate material, scrubbing flue gas passing from the heating apparatus with water and bringing at least a part of the air fluidising the bed into contact with the scrubbing water to enable said fluidising gas to entrain and carry water vapour and/or steam to said fluidised bed to aid control of the temperature of the bed, said fluidising air being fed to the fluidised bed by passing at least a part thereof through a chamber to which the water used to scrub the flue-gas is also passed.

4,436,058

HOT WATER SUPPLY TANK ASSEMBLY

Roy E. McAlister, 5285 Red Rock North, Phoenix, Ariz. 85018

Division of Ser. No. 32,636, Apr. 23, 1979, Pat. No. 4,265,220.
This application Dec. 4, 1980, Ser. No. 213,199
Int. Cl.³ F22B *5/00*
U.S. Cl. 122—13 R **5 Claims**



1. A potable hot water supply tank assembly comprising
a generally vertically extending housing assembly including a peripheral wall and upper and lower end closures,
inlet means for directing a supply of unheated water into said housing assembly adjacent said lower end closure,
outlet means for directing a supply of hot water from said housing assembly adjacent said upper end closure,
heater means within said housing assembly adjacent said lower end closure,
a lower screen assembly within said housing assembly above said heating means,
an upper screen assembly within said housing assembly adjacent said upper end closure and defining with said lower screen assembly and the coextensive portion of said peripheral wall a supply chamber within said housing assembly, and
anti-convection cartridge means having structure providing a multiplicity of separate vertical passages constituting the entire space remaining in said supply chamber other than said structure, said passage being of relatively small cross-sectional area and extending completely between said screen assemblies.

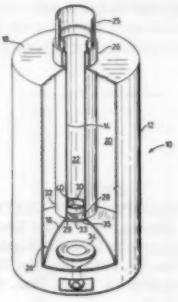
4,436,057

FLUE CONDENSATE SHIELD

Antonio Galati, Toronto, Canada, assignor to Canadian Gas Research Institute, Don Mills, Canada

Filed Apr. 26, 1982, Ser. No. 371,641
Claims priority, application Canada, Jul. 31, 1981, 383072
Int. Cl.³ F22B *5/00*
U.S. Cl. 122—17 **2 Claims**

1. An improved water heater comprising, in combination, a water heater tank having a vertical, open-ended flue formed by a cylindrical wall extending therethrough defining an inner wall of the tank adjacent water in the tank, said flue adapted to receive hot combustion gases for heating the water in said tank, a metal annulus having an outer side and an inner side formed at the bottom of the flue wall, said annulus being continuously affixed to and abutting the flue wall on the annulus outer side for effective heat transfer from the annulus to the flue wall and



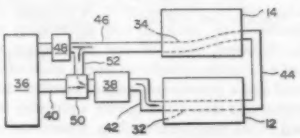
to water in said tank, said annulus having an upturned lip on the inner side thereof such that the annulus will collect and retain condensate forming on the flue wall for subsequent evaporation of said condensate, said annulus occupying from about 40 to about 60% of the sectional area of the flue and having a condensate holding capacity of about 0.3 cubic inch per 1,000 BTU/h of fuel input.

4,436,060

ENGINE COOLING SYSTEM

Toshiaki Tanaka, Fujisawa; Shoji Ushimura, Yokosuka, and Yukihiro Etoh, Yokohama, all of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Jan. 28, 1981, Ser. No. 229,103
Claims priority, application Japan, Feb. 1, 1980, 55-11280[U]
Int. Cl.³ F01P *7/16*
U.S. Cl. 123—41.1 **3 Claims**



1. A V-type internal combustion engine comprising:
(a) first and second engine blocks arranged with a V-angle;
(b) first and second cylinder units each including at least one cylinder, said first and second cylinder units being arranged in said first and second engine blocks, respectively;
(c) means for disabling said second cylinder unit under low load conditions; and
(d) a coolant circuit including:
a first jacket disposed in said first engine block, said first jacket adapted to receive an engine coolant for cooling said first cylinder unit;
a second jacket disposed in said second engine block, said second jacket adapted to receive an engine coolant for cooling said second cylinder unit, said second jacket communicating in series with said first jacket;
a radiator connected through a first passage to said first jacket and connected through a second passage to said second jacket; and
a feed pump for circulating an engine coolant through said coolant circuit in a direction from said first jacket to said second jacket such that the second cylinder unit is

maintained at a temperature sufficient to permit rapid combustion when said second cylinder unit is enabled after being disabled.

4,436,061

AUTOMOTIVE INTERNAL COMBUSTION ENGINE

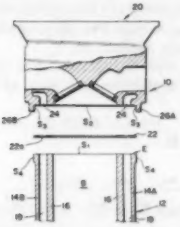
Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 10, 1981, Ser. No. 319,886

Claims priority, application Japan, Nov. 14, 1980, 55-163329[U]

Int. Cl.³ F01P *3/02*

U.S. Cl. 123—41.74 **10 Claims**



1. An automotive internal combustion engine comprising:

a cylinder head having at its bottom surface two oppositely disposed projections which extend along the length of said cylinder head;

a cylinder block having a plurality of cylinder sections, each being formed therein with an engine cylinder bore, and two water jacket walls which are oppositely disposed to interpose therebetween said cylinder sections, each water jacket wall being separate at its upper-most part from each cylinder section and forming therebetween a water jacket, the upper end part containing the water jacket wall uppermost part of said cylinder block having a contacting surface fitting inbetween said two projections of said cylinder head to form a tight contact therebetween.

4,436,062

ROCKER ARM MECHANISM IN OVERHEAD CAM TYPE ENGINE

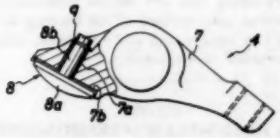
Takeshi Nakakobara, Toyota; Kiyoshi Sakaguchi, Aichi; Fumio Ueda, and Hiroyuki Murase, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Nov. 10, 1981, Ser. No. 319,902

Claims priority, application Japan, Nov. 14, 1980, 55-162806[U]

Int. Cl.³ F01L *1/02*

U.S. Cl. 123—90.27 **3 Claims**



1. A rocker arm mechanism in an OHC type engine; an intake valve, an exhaust valve, and a cam shaft comprising:

a cam rotatable while interlocking with said cam shaft; and

a rocker arm which oscillates in accordance with the rotation of said cam so as to open and close one of said intake valve and said exhaust valve, wherein said rocker arm further comprises a rocker arm body and a pad member rotatably fitted to said rocker arm body for contacting said cam, said cam and said pad member being brought into contact with each other such that said pad member may rotate due to a frictional force generated between said cam and said pad member as said cam rotates, wherein

said contact of said pad member to said cam is eccentrically located with respect to a center of rotation of said pad member;

said pad member further comprises a shaft portion and a substantially half-spherical cam receiving portion integrally formed with one end of said shaft portion, said rocker arm body includes a shaft hole bored therein orthogonal to said cam shaft, and said shaft portion is rotatably supported in said shaft hole; and

wherein said cam further comprises a curved surface parallel to said cam shaft, a tapered surface continuously formed with said curved surface and a joint formed between said curved surface and said tapered surface which contacts with said flat portion of said cam receiving member such that said cam and said pad member may be brought into point-contact with each other.

4,436,063

PUSH ROD FOR OPERATING AN INTAKE OR EXHAUST VALVE OF AN INTERNAL COMBUSTION ENGINE

Masayoshi Usui, Numazu, Japan, assignor to Usui Kokusai Sangyo Kabushiki Kaisha, Shizouka, Japan

Filed Feb. 6, 1981, Ser. No. 232,163

Claims priority, application Japan, Dec. 24, 1979, 54-178951

Int. Cl.³ F01L *1/14*

U.S. Cl. 123—90.61 **9 Claims**

1. A valve operating push rod for an internal combustion engine comprising: an elongated metal tube having a pair of opposed ends and a length defined by the distance between the opposed ends of said tube; a pair of end members having portions secured to the ends of said tube respectively; and an elongated tubular metal member having a pair of opposed ends and a length defined by the distance between said opposed ends of said tubular member, said length of said tubular member being substantially the same as the length of said tube, said tubular member being pressure fitted substantially along the entire length of said tube with the opposed ends of said tube being substantially adjacent respectively to the opposed ends of said tubular member, but with at least one end of said tubular member being spaced slightly inwardly from the substantially adjacent end of said tube and the end member secured thereto, whereby operation of the engine generates vibrations which are attenuated by the tube and the tubular member and the pressure fit therebetween.

4,436,064

PROCESS AND APPARATUS FOR DETERMINATION AND UTILIZATION OF A QUANTITY OF PREHEATING ENERGY

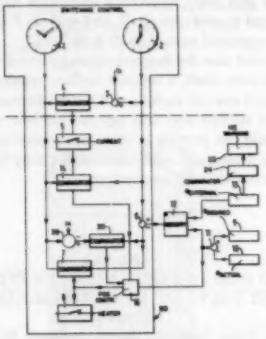
Falk Lamkewitz, Munich, and Josef Riedmaier, Pentenried, both of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Fed. Rep. of Germany

Filed Jul. 1, 1981, Ser. No. 279,599

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1980, 3024983

Int. Cl.³ F02N 17/02

U.S. Cl. 123—142.5 R 22 Claims



1. Preheating process for automatically applying a quantity of heat energy sufficient to achieve a desired temperature at a location within a motor vehicle prior to a period of usage, comprising the steps of:

(a) determining the respective preheating times required to achieve said desired temperature for various possible actual temperatures at said location on the basis of the time required by a heating device to overcome a temperature difference between the various possible temperatures at said location and said desired temperature in dependence on various possible ambient temperatures outside of said motor vehicle;

(b) storing the preheating times determined in step (a);

(c) predetermining a time for commencement of said period of usage;

(d) at a predetermined point of time prior to said usage commencement time, automatically determining a correct preheating time from said stored preheating times for use based upon actual temperature conditions at said location and the actual ambient temperature outside of said motor vehicle; and

(e) automatically commencing application of heat to said location at a time prior to said usage commencement time that corresponds to the difference between said usage commencement time and the correct preheating time determined in step (d).

4. Preheating apparatus for automatically applying a quantity of heat energy sufficient to achieve a desired temperature at a location within a motor vehicle prior to a period of usage, comprising:

(a) a heating device;

(b) a presettable timer actuted switching control means for actuating said heating device;

(c) an actual temperature value sensor means for sensing the actual temperature at said location;

(d) an external temperature sensor means for detecting actual ambient temperatures outside of the motor vehicle; and

(e) a memory unit that is addressable in dependence on the actual temperature values sensed by said sensor means and containing, as stored data, preheating time spans required for said heating device to overcome a difference between various possible actual temperatures at said location and an adjustable desired temperature in dependence upon various possible ambient temperatures outside of said motor vehicle;

wherein said switching control means is operable to actuate said heating device at a time prior to a preset time for commencement of usage that corresponds to the difference between said preset usage commencement time and a stored preheating time read out by said memory unit based upon actual temperature values sensed by said sensor means at a point of time prior to the preset usage commencement time.

4,436,065

STARTER ARRANGEMENT FOR INTERNAL COMBUSTION ENGINE

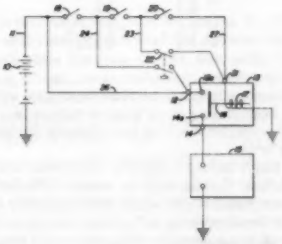
Gerhard Gradmann, Ketsch, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Apr. 5, 1982, Ser. No. 365,852

Claims priority, application Fed. Rep. of Germany, May 13, 1981, 302128

Int. Cl.³ F02N 17/00

U.S. Cl. 123—179 B 2 Claims



1. A starter system for a battery powered starter motor coupled to an internal combustion engine, the starter system comprising:

a starter relay having a motor terminal connected to the starter motor, a battery terminal connected to the battery, a coil terminal and means for connecting the battery terminal to the motor terminal in response to energization of the coil terminal;

an energizing circuit for energizing and de-energizing the coil terminal, the energizing circuit comprising an ignition switch, a safety switch and a starter switch connected in series between the coil terminal and the battery; and

a deformable insulating housing for preventing access to at least the battery terminal and the coil terminals; and

first and second manually operable bridging switches, the first bridging switch being connected in parallel with the ignition switch and the second bridging switch being connected in parallel with the starter switch, the bridging switches including first and second conductive contact mounted on an inner surface of the housing for engagement with the battery and coil terminals, respectively, upon deformation of the housing.

4,436,066

CYLINDER HEAD FOR COMPRESSION-IGNITION INTERNAL COMBUSTION ENGINE

Antonio Formia, Turin, and Giorgio Filtri, Moncalieri, both of Italy, assignors to Fiat Veicoli Industriali S.p.A., Turin, Italy

Filed Jan. 9, 1980, Ser. No. 110,735

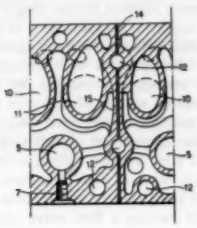
Claims priority, application Italy, May 23, 1979, 68097 A/79

Int. Cl.³ F02F 1/24

U.S. Cl. 123—193 H 6 Claims

1. A cylinder head for a compression-ignition internal combustion engine of the type having precombustion chambers

associated with the engine cylinders, the head being constituted by an elongate block formed to define walls delimiting both a cooling chamber and a plurality of cavities the latter of which provide for each of said engine cylinders, a precombustion chamber, induction and discharge ducts, and a seat for a fuel injector, said cooling chamber being traversable by coolant liquid to cool said walls which delimit the said cavities, and one said wall delimiting said cooling chamber constituting a base wall the outer surface of which faces into the cylinders of the engine when the cylinder head is assembled onto the engine



cylinder block, the said base wall being integral with said head and formed, intermediate portions of the head corresponding to said engine cylinders, with means to allow expansion comprising slits having a uniform thickness extending into said cylinder head from the said outer surface of the said base wall in a plane perpendicular to the longitudinal direction of the cylinder head across the whole width thereof adjacently spaced from said cooling chamber whereby the portions of the cylinder head corresponding to different cylinders are partially separated from one another.

4,436,067

ENGINE DRIVEN PUMP ARRANGEMENT

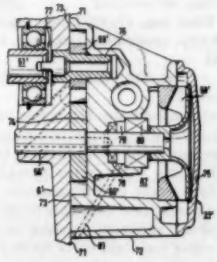
Josef Fritzenwenger, Anzing, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 24, 1981, Ser. No. 324,580

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1980, 3044253

Int. Cl.³ F01P *5/12*; F01M *11/00*

U.S. Cl. 123—198 C **11 Claims**



1. An internal combustion engine comprising a drive connection for a pump assembly wherein the assembly includes a step-down gear, a pump impeller of a coolant pump and a pump wheel of a lubricating oil gear pump situated on a common shaft, wherein pump wheels of the lubricating oil gear pump form the step-down gear for the coolant pump.

4,436,068

IGNITION SYSTEM OF AN INTERNAL COMBUSTION ENGINE

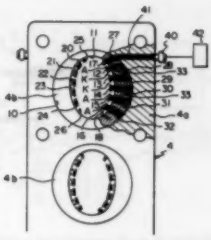
Norihiko Nakamura, Mishima, and Yoshiaki Shibata, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 5, 1982, Ser. No. 405,564

Claims priority, application Japan, Oct. 22, 1981, 56-167919

Int. Cl.³ F02P *1/00*

U.S. Cl. 123—310 **13 Claims**



1. An internal combustion engine comprising:
a cylinder block having a cylinder bore therein;
a piston reciprocally movable in said cylinder bore;
a cylinder head fixed onto said cylinder block and having an interior combustion space therein;
a voltage source for generating a high voltage;
a metallic plate inserted between said cylinder block and said cylinder head and electrically connected to said cylinder block, said metallic plate having an opening which interconnects said cylinder bore to said interior combustion space and has an inner peripheral wall exposed to said cylinder bore and said interior combustion chamber, said metallic plate having a plurality of bores formed on the inner peripheral wall of said opening and arranged in series;
a first electrode arranged on the inner peripheral wall of said opening and electrically connected to said cylinder block;
a second electrode arranged on the inner peripheral wall of said opening and electrically connected to said voltage source;
a plurality of third electrodes arranged in series on the inner peripheral wall of said opening between said first electrode and said second electrode, each of said third electrodes having an electrode piece which has opposite ends each being spaced from the adjacent electrode by a predetermined distance for forming a spark gap therebetween, each of said third electrodes having a conductive bar member connected to said electrode piece and extending through the corresponding bore of said metallic plate; and
a plurality of tubular insulating members each surrounding said conductive bar member and inserted into the bore of said metallic plate for forming a condensor between said conductive bar member and said metallic plate.

4,436,069

SETTING DEVICE FOR THE CONTROLLED DISPLACEMENT OF A STOP CONNECTED WITH A SETTING MEMBER

Harald Collonia, Glashütten, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,659

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1981, 3146210

Int. Cl.³ F02M *3/00*

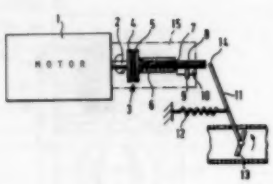
U.S. Cl. 123—339 **10 Claims**

1. In a setting device for controlled displacement of a stop connected with a setting member, particularly an idling stop of

an internal combustion engine which is pressed by a spring against a stop pin, the latter being displaceable by an electric drive member, and the stop being actuatable independently of the latter with opening of a force-locked connection to the electric drive member, the improvement wherein

the electric drive member is an electric motor,

the force-locked connection is constituted by a clutch having a first clutch part and a second clutch part, said first clutch part being displaceable to engagement against said second clutch part,



said second clutch part constitutes a driving member operatively connected between the stop pin and the electric motor,

a self-locking gearing means for converting rotary motion of said first clutch part into a translation of said stop pin,

said gearing means is arranged between the stop pin and said displaceable first clutch part such that said clutch becomes engaged force-locked by force of the spring on the stop pin via the stop.

4,436,070

APPARATUS FOR CONTROLLING THE PROPORTION OF AIR AND FUEL IN AN AIR-FUEL MIXTURE OF THE INTERNAL COMBUSTION ENGINE

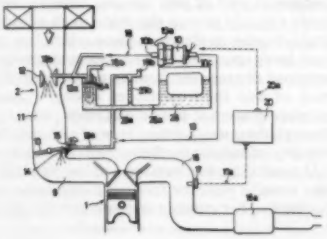
Motonobu Akagi; Isshi Nomura, both of Aichi; Kyo Hattori, and Kichiro Kato, both of Shizuoka, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jun. 22, 1982, Ser. No. 390,889

Claims priority, application Japan, Jun. 23, 1981, 56-097041

Int. Cl.³ F02M *7/24*

U.S. Cl. 123—440 **3 Claims**



1. An apparatus for controlling the proportion of air and fuel in the air-fuel mixture of the internal combustion engine having an intake manifold, a main system fuel passage and a slow system fuel supply port, comprising:

a carburetor including an air horn tube having a venturi tube with a main nozzle and a throttle valve and connected to the intake manifold of said internal combustion engine, a main system fuel tube opening into said main nozzle of said venturi tube at a first end thereof and communicating with said main system fuel passage through a second end thereof,a slow system fuel tube opening into said slow system fuel supply port which is adjacent to said throttle valve of the air horn tube at a first end thereof and communicating with a slow system fuel passage through a second end thereof:

a proportional control solenoid valve including a box-shaped housing formed of a magnetic material and provided with an air-inlet port, a first outlet port connected to said main system air-bleeding passage and a second outlet port connected to said slow system air-bleeding passage, a single iron core having a tubular periphery, supported by said housing at opposite ends thereof and provided with separately formed first and second passages communicating with said first outlet port and said second outlet port, respectively, at opposite ends thereof, at least one first valve opening formed in the shape of an oblong circle extending axially of said iron core in a portion of said iron core provided with said first passage to allow communication of said first passage with said air-inlet port, and second valve openings formed in the shape of an oblong circle extending axially of said iron core in a portion of said iron core provided with said second passage for allowing communication of said second outlet port with the air-inlet port, a single bobbin axially slidably mounted on the periphery of said iron core, a solenoid wound around the periphery of said bobbin in an axial portion thereof and having a first valve element and a second valve element for opening and closing said at least one first valve opening and said at least one second valve opening respectively, spring means urging said bobbin in one axial direction of said iron core and at least one pair of permanent magnets fixed to said housing at a position corresponding to said solenoid and so disposed that the flux of the magnetic force thereof passes perpendicular with respect to said solenoid; and

control means for supplying analog electric signals to said solenoid of said proportional control solenoid valve whereby said bobbin of said proportional control solenoid valve moves axially along said iron core a distance proportional to a level of the analog electric signals applied to the solenoid by said control means and said first valve element and said second valve element open said at least one first valve opening and said at least one second valve opening, respectively, by respective areas corresponding to the level of said analog electric signals.

4,436,071

ELECTROMAGNETICALLY ACTUATABLE VALVE, IN PARTICULAR A FUEL INJECTION VALVE

Udo Hafner, Lorch; Harro Herth, Vaihingen; Wolfgang Kienzle, Schwieberdingen; Heinrich Knapp, Leonberg; Rudolf Krauss, Stuttgart; Manfred Lembke, Gerlingen; Werner Paschke, Schwieberdingen, and Rudolf Sauer, Benningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 17, 1982, Ser. No. 408,976

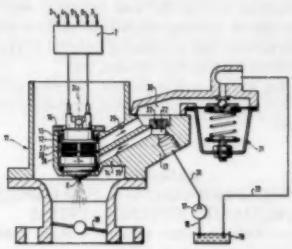
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 3143849

Int. Cl.³ F02M *39/00, 32/00*

U.S. Cl. 123—472 **3 Claims**

1. An electromagnetically actuatable valve, in particular, a fuel injection valve for fuel injection systems of internal combustion engines provided with a housing having a valve chamber therewithin, said valve furher provided with a magnetic coil surrounding a core of ferromagnetic material, said magnetic coil being associated with an armature, said valve having a movable valve component operable by said armature with relation to a valve seat, said valve further having at least one fuel supply opening extending through said housing to said valve chamber and at least one fuel return opening extending from said valve chamber to an exit in said housing, said valve further having a collecting chamber which encompasses the armature and the valve component and communicates with said at least one fuel supply opening, characterized in that said at least one fuel supply opening discharges into a flow passage provided around said magnetic coil upstream from said collect-

ing chamber, said flow passage communicating with said at least one fuel return opening via a first restriction, said core being provided with a second restriction extending between



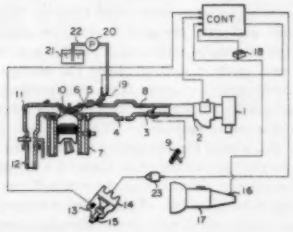
the collecting chamber and said at least one fuel return opening, whereby vapor bubbles may be exhausted from the fuel to be injected.

4,436,072

FUEL INJECTION CONTROL IN AN INTERNAL-COMBUSTION ENGINE

Yukio Suzuki; Kunihiko Sato, and Motoyasu Muramatsu, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 15, 1982, Ser. No. 450,044
Claims priority, application Japan, Mar. 29, 1982, 57-49196
Int. Cl.³ F02B *3/00*; F02P *5/04*
U.S. Cl. 123—488 **3 Claims**



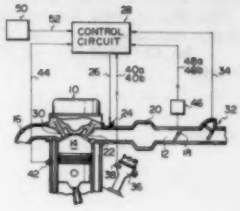
1. A method for controlling fuel injection in an internal-combustion engine for an automobile in which the rate of change of the rotational speed of the engine is checked as to whether or not the rate of change of the rotational speed of the engine exceeds the selected limit of the rate of change of the rotational speed of the engine, determined by the ratio of the rotational speed of the engine to the speed of the automobile and the ratio of the amount of intake air to the rotational speed of the engine, the value of the rotational speed of the engine used in the control of fuel injection being restricted to within said selected limit of the rate of change of the rotational speed of the engine and the width of the fuel injecton pulse and the ignition timing of the engine being controlled by using said restricted value of the rotational speed of the engine.

4,436,073

METHOD OF AND APPARATUS FOR CONTROLLING THE FUEL FEEDING RATE OF AN INTERNAL COMBUSTION ENGINE

Hideo Miyagi, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Aug. 24, 1981, Ser. No. 296,242
Claims priority, application Japan, Sep. 1, 1980, 55-119832
Int. Cl.³ F02B *3/02*
U.S. Cl. 123—491 **12 Claims**



1. A method of controlling the fuel feeding rate of an internal combustion engine, comprising the steps of:

detecting the load condition of said engine;

generating a first electrical signal related to the warm-up condition of said engine;

generating a second electrical signal related to whether said engine is starting or not;

generating a third electrical signal related to the rotational speed of said engine;

determining a fuel feeding amount for every engine revolution in accordance with said detected load condition;

calculating, in response to said first and second electrical signals, an additional increment of the fuel feeding amount for every engine revolution, said additional increment being determined in accordance with said detected warm-up condition during starting and, after starting, being decreased in accordance with the lapse of time;

correcting said calculated additional increment in response to said third electrical signal, said calculated additional increment being corrected to increase when the detected rotational speed decreases and to decrease when the detected rotational speed increases; and

controlling the fuel feeding amount for every engine revolution in accordance with said determined fuel feeding amount and said corrected increment.

7. An apparatus for controlling the rate of fuel supplied to an internal combustion engine comprising:

means for detecting the load condition of said engine;

means for generating a first electrical signal related to the warm-up condition of said engine;

means for generating a second electrical signal related to whether said engine is starting or not;

means for generating a third electrical signal related to the rotational speed of said engine;

processing means for (1) determining a fuel feeding amount for every engine revolution in accordance with said detected load condition, (2) calculating, in response to said first and second electrical signals, an additional increment of the fuel feeding amount for every engine revolution, said additional increment being determined in accordance with said detected warm-up condition during starting and, after starting, being decreased in accordance with the lapse of time, and (3) correcting said calculated additional increment in response to said third electrical signal, said correcting function correcting the calculated additional increment to increase the increment when the detected rotational speed decreases and to decrease the increment when the detected rotational speed increases; and

means for controlling the fuel feeding amount for every

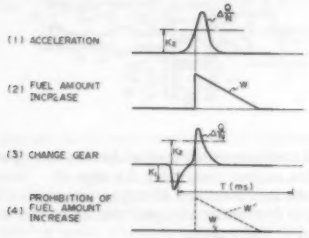
engine revolution in accordance with said calculated fuel feeding rate and said corrected increment.

4,436,074

METHOD AND APPARATUS FOR CONTROLLING THE FUEL INJECTION IN INTERNAL COMBUSTION ENGINE

Hirotaka Nakatsuka, Kariya; Toshiaki Mizuno, Nagoya; Hisamitsu Yamazoe, Kariya, and Hiroki Matsuoka, Susono, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Touota, both of, Japan

Filed Jun. 15, 1982, Ser. No. 388,654
Claims priority, application Japan, Jun. 17, 1981, 56-92110
Int. Cl.³ F02B 3/00, 33/00
U.S. Cl. 123—492 5 Claims



1. An apparatus for controlling the fuel injection in an internal combustion engine, comprising: an air flow sensor; a rotation sensor; a collant water temperature sensor; a fuel injection nozzle; and an electronic control device for receiving the signals from said intake air sensor, said rotation sensor, and said coolant water temperature sensor, for calculating the fuel injection duration on the basis of said received signals, and for producing the signal to control said fuel injection nozzle;

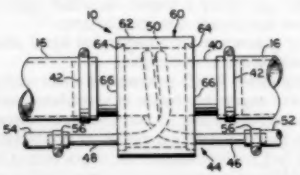
the ratio (Q/N) between the intake air amount (Q) and the rotational speed (N) being used as the signal for triggering the increase, wherein said fuel increase is prohibited or modified during gear change operations of the automobile driven by the engine.

4,436,075

FUEL PRE-HEAT DEVICE

Robert L. Campbell, Decatur, Ill., and Daniel D. Bailey, 1014 Norman, Anchorage, Ak. 99504, assignors to Daniel D. Bailey, Anchorage, Ak.

Filed Jan. 7, 1982, Ser. No. 337,850
Int. Cl.³ F02M 31/00
U.S. Cl. 123—557 5 Claims



1. A fuel pre-heat device for use with an engine having a fuel pump, a fuel dispenser and a radiator hose, the device comprising:

(a) a tubular section having opposed ends communicating with the radiator hose,

(b) a fuel line section including opposed end portions and an intermediate coiled portion wrapped around the tubular section, one of said end portions being connected to the fuel pump and the other of said end portions being operatively connected to the fuel dispenser,

(c) a housing for the coiled portion of the fuel line including a tubular body having annular end recesses and opposed covers attached within the end recesses, each of said covers having an opening adapted to receive one end of the tubular section and an opening adapted to receive one end portion of the fuel line section, and

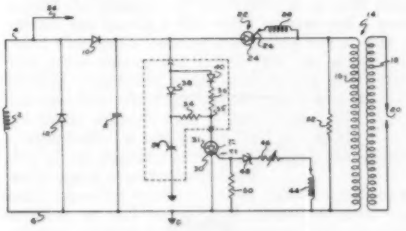
(d) the fuel line section coiled portion including at least two turns and the ends being disposed in cross-over relation to each other.

4,436,076

ELECTRONIC SPEED CONTROL FOR CAPACITOR DISCHARGE IGNITION SYSTEM

Michael J. Piteo, Enfield, Conn., assignor to R. E. Phelon Company, Inc., East Longmeadow, Mass.

Filed Sep. 25, 1981, Ser. No. 306,281
Int. Cl.³ F02P 5/00
U.S. Cl. 123—602 5 Claims



1. In a capacitor discharge ignition system for an internal combustion engine having rotatable magnet means associated with engine rotation to generate electrical energy, a capacitor chargeable by said energy and selectively connected in timed relationship with engine operation to the primary winding of an ignition coil to generate an ignition pulse by the discharge of the capacitor charge through said primary winding, as a means for protecting said engine and any apparatus driven thereby against excessive high-speed operation, an electronic shut-off system comprising a silicon controlled rectifier (SCR) having anode, cathode and gate electrodes, with its anode/cathode path connected in parallel with said capacitor and the primary winding of said ignition coil to shunt the energy from the charge coil and capacitor away from said primary winding, means for generating a voltage in response to a predetermined high rotational speed of said engine, the gate of said SCR being connected to said means for generating a voltage for triggering said SCR to its conductive state and means for maintaining the SCR in its conductive state for a predetermined time sufficient to ensure complete engine cut-off, including a second capacitor and a resistor connected to provide continuing current to said anode to hold the SCR "on" for said predetermined time.

4,436,077

GUN AND RESILIENT LOOP PROJECTILE THEREFOR

Wayne G. Smith, 10129, Overland Park, Kans. 66212

Filed Dec. 14, 1981, Ser. No. 330,073
Int. Cl.³ F41B 7/00
U.S. Cl. 124—18 14 Claims

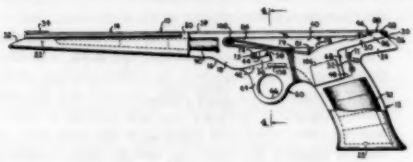
1. A gun for projecting resilient loop missiles, said gun comprising:

a body including a handle and an elongated frame for holding a missile in a stretched condition, said body having a cavity extending therethrough;

a member slidably positioned in the cavity including trigger means projecting from the cavity forwardly of the handle,

and plunger means movable with the member to a missile engaging position for dislodging the latter; and

means on the body to confine the member to a rectilinear, fore and aft path of travel in the cavity, said path being inclined upwardly as the rear of the gun is approached, whereby said plunger may impart a generally upwardly and rearwardly lifting force on the missile to enhance the projection thereof, said body being configured to present a pair of grooves at the rear of the gun to facilitate the positioning of missiles on the gun in stretched condition, one of the grooves being spaced upwardly and forwardly



of the other groove and adjacent the path of travel of the plunger means for dislodgement thereby, said other groove being on the outer surface of the body at the rear thereof and spaced downwardly of the body and below-said one of the grooves in disposition clear of the plunger mean's 's path of travel, whereby a stored stretched missile positioned on the gun in said other groove will not be dislodged by said plunger means when the latter is moved to a missile dislodging position, and a stretched missile may be readily positioned manually in said one groove so as to be in position for release by said plunger means.

4,436,078

APPARATUS FOR CUTTING STONE PANELS

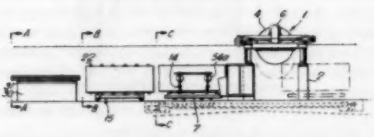
Patrick T. Bourke, Doon House, Maam, County Galway, Ireland

Division of Ser. No. 147,757, May 8, 1980, Pat. No. 4,350,552, which is a continuation-in-part of Ser. No. 64,999, Aug. 7, 1979, Pat. No. 4,346,691, which is a continuation-in-part of Ser. No. 394,138, Sep. 4, 1973, Pat. No. 3,963,846. This application Jan. 21, 1982, Ser. No. 341,551

Claims priority, application United Kingdom, Sep. 4, 1972, 40839/72; Jan. 19, 1973, 2795/73; Ireland, May 9, 1979, 402/79

Int. Cl.³ B28D *1/04*

U.S. Cl. 125—13 R **5 Claims**



1. Apparatus for use in manufacturing composite surface elements having a lamina of stone bonded to a backing layer, comprising a stone-cutting saw having at least one disc blade adapted to cut in a vertical plane, conveyor means for conveying a stone slab beneath the saw blade, at least one slab gripping device mounted on said conveyor means and adapted to support the slab upwardly on one longitudinal edge of the slab, and means for tumbling the partly-cut slab onto its opposite longitudinal edge after a first pass through the saw, the tumbling means comprising a body portion having two spaced-apart parallel channel-shaped bearings lying in a substantially horizontal plane, a frame which is adapted to receive and support a slab of stone and which is provided with a pair of spaced-apart parallel axles which are adapted to engage with said channel-shaped bearings, the arrangement being such that the frame may be pivoted from a first position in which it is disposed in a substantially vertical plane on one side of said body portion with one of said axles located in one of said channel-shaped bearings, through approximately 90° about said bearings, to a position in which the frame is disposed horizontally on said body portion with an axle engaged in each of said channel-shaped bearings, the frame then being pivotable about said other channel-shaped bearing through a further 90° until it is again disposed in a substantially vertical plane on the opposite side of the body portion.

4,436,079

FIREPLACE FOR HEATING INDOOR SPACES AND WATER FOR SANITARY USE

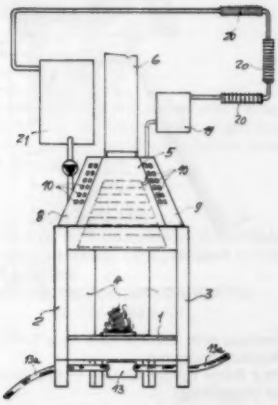
Domenico Piazzetta, Via Montello, 23-Casella D'Asolo-(Provincia di Treviso, Italy

Filed Jun. 15, 1981, Ser. No. 273,554

Claims priority, application Italy, Jun. 25, 1980, 41596 A/80

Int. Cl.³ F24B *7/00*

U.S. Cl. 126—121 **1 Claim**



1. A diversified heat energy operated compact fireplace comprising a hearth, lateral walls bordering said hearth on its sides, a partition on the rear of the hearth, a hood overlying the hearth and a flue into which said hood extends, at the rear of said partition an interspace defined by said partition, two compartments extending on the sides of said hood and communicating with said interspace, said compartments having each a front face with a plurality of holes in said front faces for allowing air to flow therethrough, a screen extending in front of the hood and the flue to define a screened space behind said screen, said screened space enclosing said hood and said flue, ports in said screen at the upper region thereof to allow passage of air therethrough, a tube nest heat exchanger in the upper inner portion of said hood, said heat exchanger being exposed in use to combustion gases from the hearth, hydraulic circuit means for said heat exchanger, said hydraulic circuit means including a pump within said screened space for circulating heat exchanging oil through said heat exchanger, a gas-fired boiler in said hydraulic circuit means and arranged in said screened space, said gas-fired boiler providing a first diversified heat energy source for said fireplace, a water heater included in said hydraulic circuit and located in said screened space for providing hot water for sanitary purposes and radiator elements connected with said hydraulic circuit, duct means connected with the lower part of said interspace, a fan located below said hearth and in communication with said duct means to draw in use air from said interspace and thereby create in use a current of air entering said ports of the screen from the indoor space and flowing downwards through said screened space towards said holes in said compartments and through said hole into said compartments and therefrom into said interspace, said fan

having delivery ducts leading into the indoor space to be heated, said duct means connected with the bottom of said interspace including an electric resistance heater for heating in use the air drawn by said fan, said heater providing a second diversified heat energy source.

4,436,080

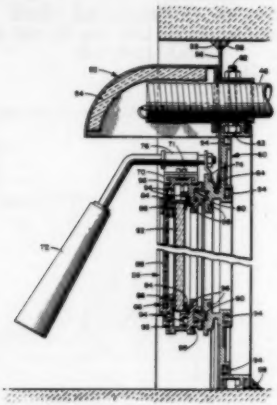
FIREPLACE AND STOVE APPARATUS

Jeffrey L. Evans, Aspen, Colo., assignor to Ting Enterprises, Inc., Aspen, Colo.

Division of Ser. No. 359,061, Mar. 17, 1982. This application Sep. 20, 1982, Ser. No. 420,339

Int. Cl.³ F24C *15/04*

U.S. Cl. 126—139 **6 Claims**



1. A fireplace door construction for a firebox comprising:

(a) a fireplace door; and

(b) a door frame rigidly secured to said fireplace, said door frame comprising:

a flange portion for receipt of a flange,

a door portion against which the fireplace door can close; the door portion of the frame being further from the firebox than the flange portion, and

isolating means connecting said flange portion to said door portion and thermally isolating the door portion from the flange portion, to thereby prevent the heat of the fire from warping the door portion.

4,436,081

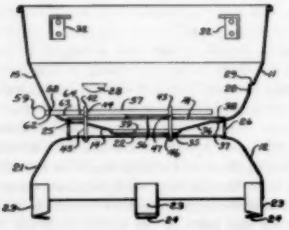
DAMPER ASSEMBLY FOR BARBECUE GRILL

Dennis V. Hefling, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Jan. 27, 1982, Ser. No. 343,321

Int. Cl.³ F23L *3/00*

U.S. Cl. 126—285 A **9 Claims**



1. A damper assembly for a barbecue having an outer casing, the outer casing having a bottom and an upwardly extending sidewall, the damper assembly including:

(a) a generally horizontally extending slide plate mounted within the outer casing above the bottom wall, the slide plate having upper and lower surfaces and having an opening therethrough,

(b) a pair of eye bolts, each eye bolt having a looped end and a shank, the looped end of each eye bolt being positioned above the slide plate and the shank of each eye bolt extending through the slide plate and being secured to the bottom of the outer casing,

(c) a damper plate having an outside dimension greater than the diameter of the opening in the slide plate, and

(d) a rod secured to the damper plate and extending slidably through the looped ends of the eye bolts whereby the damper plate is maintained in sliding contact with the upper surface of the slide plate, the rod and the damper plate being movable between a first position in which the damper plate covers the opening in the slide plate and a second position in which the damper disc uncovers the opening in the slide plate, the rod having an end which extends through an opening in the outer casing whereby the rod and the damper plate can be moved from outside of the casing.

4,436,082

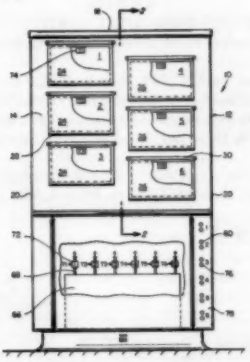
ASSEMBLY FOR STEAM HEATING OR COOKING FOOD PRODUCTS AND ITS METHOD OF OPERATION

Jeffrey H. Hiller, and Stephen S. Hiller, both of 1300 Hancock St., Redwood City, Calif. 94063

Filed Oct. 29, 1981, Ser. No. 316,131

Int. Cl.³ F24D *1/00*

U.S. Cl. 126—348 **20 Claims**



1. An assembly for steam heating or cooking a given food product, comprising housing means including a cooking chamber; means for sensing the temperature within said cooking chamber; boiler means including a steam chamber for maintaining a supply of steam under pressure within said steam chamber continuously throughout operation of the assembly; and flow control means connected between said steam chamber and cooking chamber and responsive to said temperature sensing means for directing steam from the supply in said steam chamber into said cooking chamber when the temperature therein is below a preset value, whereby to raise the chamber temperature to said preset value for heating or cooking said food product at that temperature.

18. A method of steam heating or cooking given food products, comprising the steps of: providing an oven having an internal chamber, inlet door means into said chamber, vertically lower outlet door means out of said chamber, and ramp means in said chamber extending between said inlet and outlet

door means for guiding a plurality of support trays between said inlet and outlet door means, one at a time; providing a plurality of support trays supported on wheels and placing a plurality of said food products on each of said trays; thereafter placing said trays, one at a time, into said chamber through said inlet door means in cooperation with said ramp means so as to cause said trays and the food products supported thereby to move through said chamber, one at a time, from said inlet door means to points adjacent said outlet door means by their own weight; while said trays are in said chamber, heating the food products thereon; and removing said trays and supported food products from said chamber through said outlet door means, one at a time, in the order in which the trays were placed into said chamber.

4,436,083

SUNBEAM CONCENTRATING AND COLLECTING APPARATUS

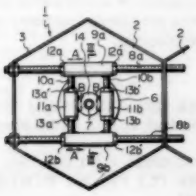
Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Nov. 2, 1981, Ser. No. 317,453

Claims priority, application Japan, Nov. 6, 1980, 55-159013[U]

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—417 **8 Claims**



1. A sunbeam concentrating and collecting apparatus comprising a lens system for concentrating sunbeams and a light conductor cable having a beam-receiving end face thereof arranged at the focus of said lens system, wherein sunbeams concentrated by said lens system are guided into said light conductor cable, said apparatus comprising: a cable holding means and a position adjusting means, said cable holding means being intended to hold said beam-receiving end face of the light conductor cable, said position adjusting means having a first adjusting means which supports said cable holding means and is capable of moving said beam-receiving end face of the light conductor cable in the direction of the optical axis perpendicular to each other; and said apparatus further including a light-shielding plate provided on the sunbeam concentrating side of said cable holding means and said position adjusting means, said light-shielding plate surrounding said beam receiving end face of the light conductor cable.

4,436,084

PORTABLE PANE MOUNTABLE SOLAR PANEL

Jack E. Carlston, 1834 Antisdale Rd., Muskegon, Mich. 49442, and Harold W. Johnson, 3337 Jefferson, Muskegon Heights, Mich. 49444

Filed Sep. 17, 1981, Ser. No. 303,199

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—429 **6 Claims**

1. A portable window mounted solar panel for attaching to the inside face of a glass pane comprising:

a shallow box-like frame open on one side and having height adjustable means;

sealing means on the perimeter edge of the open side of said frame to contact said glass pane;

at least one upper heat discharge port through said frame;

at least one lower input port through said frame;

a plurality of elongate heat absorbers in said box frame;

a parabolic trough concentrator focusing on each of said heat absorbers;

a plurality of open mesh baffled heat accumulators in spaced

relation to each other and in spaced relation to said absorbers and fully across the open side of said box; and

automatic means assuring unidirectional flow through said frame from bottom to top.

4,436,085

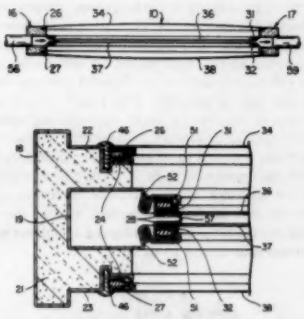
SOLAR COLLECTOR ASSEMBLY AND FRAME

Raymond B. Larsen, Sausalito, Calif., assignor to Acme Solar Works, Inc., Lodi, Calif.

Filed Aug. 24, 1982, Ser. No. 411,032

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—450 **6 Claims**



1. A frame for a solar collector comprising

opposite side frame members and opposite end frame member connected to form a rectangular frame;

each of said frame members comprising a C-shaped outer shell and a boxlike inner member supported in spaced relationship inside the C-shaped outer shell by insulating material;

said boxlike member including a protrusion along the inner edge adapted to support films on each side therewith in spaced relationship to one another;

said protrusion on the end members including openings to communicate with the space between said films;

means for applying fluid to the boxlike member of the upper end member so that the fluid flows outwardly through the openings formed in its protrusion between the films and

means for removing fluid which flows through the openings

in the lower protrusion into the boxlike member of the lower frame member

said frame adapted to support outer films one in spaced relationship with each adjacent inner film and

means in one of said side frame members for introducing air between the outer films and the adjacent inner films and means in the other side frame member for allowing the air to vent.

4,436,086
Patent Not Issued For This Number

4,436,087
BIOPTIC INSTRUMENT

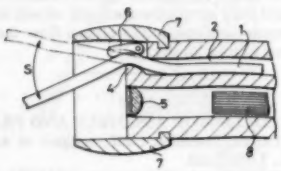
Teruo Ouchi, Saitama, Japan, assignor to Kabushiki Kaisha Medos Kenkyusho, Tokyo, Japan

Filed Dec. 11, 1978, Ser. No. 967,949

Claims priority, application Japan, Dec. 11, 1977, 52-148461; Dec. 11, 1977, 52-166057[U]; Dec. 24, 1977, 52-155830; Jan. 14, 1978, 53-2905[U]; Feb. 22, 1978, 53-21662[U]; Dec. 11, 1978, 53-2904[U]

Int. Cl.³ A61B *1/12*

U.S. Cl. 128—6 **7 Claims**



1. A medical instrument for insertion into the body for the study of internal areas, comprising: an elongate hollow member having a hollow passage therein, an opening at the terminus of said passage; a member for insertion into said passage; an optical member disposed in the vicinity of said opening; means disposed adjacent said opening to deflect said insertion member to a suitable angle; said means to deflect being further operable to selectively deflect the flow of a stream of cleaning fluid from said hollow passage onto a body cavity surface or onto said optical member; a hood surrounding said opening; said means to deflect comprising a member extending beyond said opening and adapted to be positioned to deflect said insertion member; said means to deflect further comprising a pivoting deflection member having a flow directing channel to deflect said stream of fluid onto said optical member; and wherein said insertion member is adapted to deliver said stream of fluid toward said means to deflect.

4,436,088
UPPER ARM BRACE

Alan Finaleston, 1901 NW. 17 Ave., Miami, Fla. 33125

Filed Sep. 8, 1981, Ser. No. 299,815

Int. Cl.³ A61F *5/04*

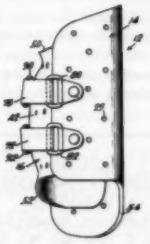
U.S. Cl. 128—77 **3 Claims**

1. An upper arm brace for protecting and reinforcing the surfaces of the upper arm of the wearer between the shoulder zone and the elbow zone, said brace comprising,

an elongate, generally U-shaped posterior member having a base and sidewalls adapted to extend around the posterior surface of the upper arm,

an elongate generally C shaped anterior member having a base and side walls adapted to extend around the anterior surface of the upper arm, the posterior member and the anterior member having longitudinal side edges being disposed in overlapping relationship with each other whereby the anterior and posterior members encase the upper arm with the inner surface of the anterior and posterior members in contact with the surface of the upper arm,

said anterior and posterior members being of a semi-rigid material with the side walls of said members capable of being flexed, the base of the anterior member having a central portion bulged outwardly to accommodate the bicep muscle whereby the engagement of the outwardly



bulged central portion of the anterior member with the bicep muscle assists in retaining the arm brace in a predetermined position on the upper arm,

fastener means mounted on said posterior member for securing said posterior and anterior members snugly together in overlapping relationship.

4,436,089
PRESSURE DRESSING WITH CUSHION

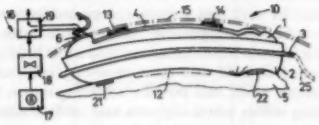
Eduard Schmid, Böheimstrasse 37, D7000 Stuttgart 1, Fed. Rep. of Germany

PCT No. PCT/DE80/00028, § 371 Date Nov. 9, 1981, § 102(e) Date Nov. 9, 1981, PCT Pub. No. WO81/02517, PCT Pub. Date Sep. 17, 1981

PCT Filed Mar. 11, 1980, Ser. No. 321,168

Int. Cl.³ A61F *13/00*

U.S. Cl. 128—155 **6 Claims**



1. A skin graft pressure dressing for pressing a skin graft against a body member,

said pressure dressing comprising in combination:

a fluid-containing cushion for engaging and exerting pressure against the entire skin graft and the surrounding normal skin on the body member,

said cushion having thin flexible walls enclosing a space for receiving a fluid material,

said walls being made of a thin flexible resilient foil material,

a rigid pressure plate engaging said cushion on the side thereof opposite from the skin graft for pressing said cushion against the skin graft and the surrounding normal skin,

said plate being made of a transparent material,

the foil material between said plate and the skin graft also being transparent to render the skin graft clearly visible for inspection through said plate and said cushion,

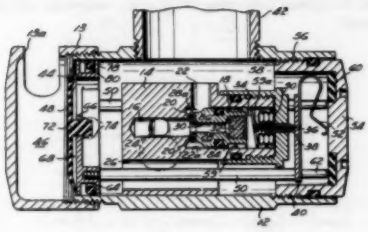
means for securing said plate to the body member while exerting pressure upon said plate to press said plate against said cushion so that said cushion will exert pressure against the skin graft,

and means for producing, maintaining and controlling the pressure of the fluid material within said cushion.

4,436,090
PISTON ACTUATED, PILOT VALVE OPERATED BREATHING REGULATOR

Phillip H. Darling, 38 Meadowgrass, Irvine, Calif. 92714

Continuation of Ser. No. 5,158, Jan. 22, 1979, abandoned. This application Aug. 11, 1981, Ser. No. 291,998
Int. Cl.³ A62B 7/00
U.S. Cl. 128—204.26 74 Claims



1. A device for the regulation of a user's breathing from a source of pressurized gas, comprising:

a housing having passage means for conducting said pressurized gas to said user;

a valve body in said housing, said valve body having a pressurized gas inlet and a gas outlet, said outlet communicating with said passage means;

a first pressurization chamber in said body, communicating with said inlet;

valving means, moveable within said body, for controllably opening and closing said outlet, said valving means having first and second surfaces, said first surface confronting said first chamber, said second surface having a larger area than said first surface;

a second pressurization chamber communicating with said first pressurization chamber, said second surface of said valving means confronting said second chamber, said valving means being moveable in opposite directions within said body in response to the force differential between said first and second surfaces so that said valving means closes said gas outlet when the force on said second surface, equal to the pressure on said second surface times the area of said second surface, is greater than the force on said first surface, equal to the pressure on said first surface times the area of said first surface, thus closing said gas outlet when the pressures in said first and second pressurization chambers are equal, and said valving means opens said gas outlet when the force on said first surface is greater than the force on said second surface;

a pilot valve having pilot passage means for venting gas from said second chamber to reduce the pressure in said second chamber with respect to the pressure in said first chamber so that said valving means opens said outlet;

pilot passage closure means, slideably moveable between a first position and a second position, for closing said pilot passage means in said first position and opening said pilot passage means in said second position;

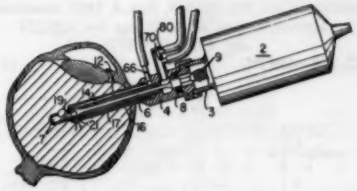
pilot valve actuating means, attached to said pilot passage closure means, and forming a pressure interface between the interior and exterior of said housing, for moving said closure means from said first position to said second position in response to an inhalation-induced reduction in pressure on the interior side of said interface with respect to the pressure on the exterior side of said interface; and

exhalation outlet means from said housing.

4,436,091
SURGICAL CUTTING INSTRUMENT WITH RELEASE MECHANISM

Anton Banko, The Bronx, N.Y., assignor to Surgical Design Corporation, Long Island City, N.Y.

Filed Mar. 20, 1981, Ser. No. 245,704
Int. Cl.³ A61B 17/32
U.S. Cl. 128—305 8 Claims



1. A surgical instrument for severing by a shearing action material located between two coacting surfaces comprising

an elongated tubular member having a surface defining an opening into which material to be severed is introduced,

a cutter means disposed within said tubular member and having a cutting surface to coact with the surface of said tubular member defining and opening for producing a shearing action of material between said cutting surface and said surface of said tubular member,

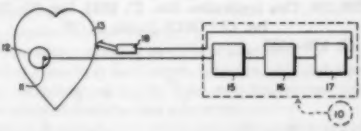
means for moving one of said cutting means and tubular member to produce relative motion in a first direction to produce the shearing action of material between said coacting surfaces,

and means responsive to the controlled stopping of relative movement in said first direction causing said moving means to produce relative motion between said cutter means and said surface of said tubular member in a second direction opposite to said first direction for a predetermined amout to clear material trapped therebetween, said cutter means always remaining within said tubular member.

4,436,092
EXERCISE RESPONSIVE CARDIAC PACEMAKER

William A. Cook, Bloomington; Neal E. Fearnot, and Leslie A. Geddes, both of West Lafayette, all of Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed May 19, 1982, Ser. No. 379,667
Int. Cl.³ A61N 1/36
U.S. Cl. 128—419 PG 9 Claims



1. A cardiac pacemaker including means for variably controlling the stimulation rate of the heart according to the level of muscular exertion in the body, comprising:

a temperature sensing means for sensing a non-ambient body temperature, said non-ambient body temperature related by an algorithm to heart rate in a normally functioning heart, said temperature sensing means producing an output signal;

an algorithm implementing means connected to said temperature sensing means for implementing said output signal by an algorithm which represents the mathematical function between said non-ambient body temperature and heart rate in a normally functioning heart; and

a cardiac pacemaker connected to said algorithm implementing means and responsive thereto in order to variably control the stimulation rate of said heart.

4,436,093

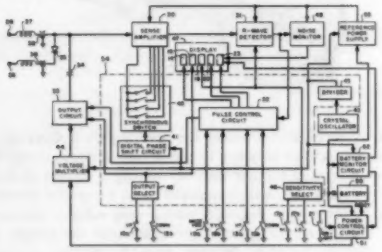
CARDIAC PACER HAVING ACTIVE NOTCH FILTER SYSTEM

Kenneth W. Belt, Fort Atkinson, Wis., assignor to Norland Corporation, Fort Atkinson, Wis.

Continuation of Ser. No. 203,959, Nov. 4, 1980, abandoned. This application Sep. 28, 1982, Ser. No. 425,223

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—419 PG **14 Claims**



1. In a cardiac pacer of the type responsive to an applied cardiac sense signal which includes a desired signal component and a power line-induced interference component, a sense amplifier comprising:

means comprising a plurality of selectable sample-and-hold channels for independently sampling the instantaneous amplitude of said cardiac signal;

sampling means for sequentially and repeatedly selecting said channels whereby each channel is selected for an equal period of time over a complete selecting cycle; and

signal summation means for combining the outputs of said channels to derive an output signal including said desired signal component;

said channels being selected at a frequency of nf, where n is a whole integer and f is the frequency of the power line component, whereby said interference component is attenuated from said output signal.

4,436,094

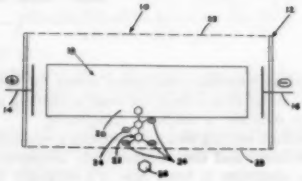
MONITOR FOR CONTINUOUS IN VIVO MEASUREMENT OF GLUCOSE CONCENTRATION

Anthony Cerami, New York, N.Y., assignor to Evreka, Inc., Bergenfield, N.J.

Continuation-in-part of Ser. No. 241,991, Mar. 9, 1981, Pat. No. 4,330,299. This application Jan. 27, 1982, Ser. No. 343,128

Int. Cl.³ G01N *33/66, 27/30*

U.S. Cl. 128—635 **30 Claims**



14. A glucose monitor for the continuous, in vivo measurement of glucose concentration in animal body fluids comprising:

A. an electrode adapted to electrically sense variations in the concentration of said glucose in said body fluid;

B. said electrode including a charge-transfer medium comprising a reversible complex of a binding macromolecular component, and a charge-bearing carbohydrate component;

C. said reversible complex adapted to react with said glucose to change the level of electrical charge sensed by said electrode, to thereby indicate corresponding variations in said glucose concentration.

15. The monitor of claim 14 wherein said binding macromolecular component comprises one or more lectins, and said charge-bearing carbohydrate component, comprises monosaccharides and oligosaccharides containing a material selected from the group consisting of glucose, mannose, and mixtures thereof.

4,436,095

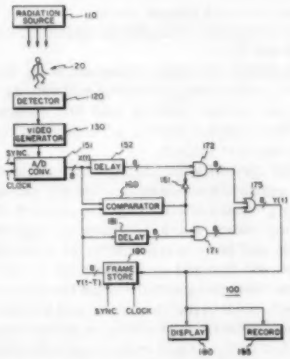
METHOD AND APPARATUS FOR IMAGING A BODY

Robert A. Kruger, Salt Lake City, Utah, assignor to Thomson-CSF Broadcast, Inc., Stamford, Conn.

Filed Dec. 22, 1981, Ser. No. 333,558

Int. Cl.³ A61B *6/00*

U.S. Cl. 128—654 **12 Claims**



1. A method for generating a processed video image of a fluid-carrying vessel in a body, comprising the steps of:

injecting a contrast medium to pass into the vessel;

irradiating the body;

detecting radiation which passes through the body and generating a series of frames of electronic video signals that represent an image of the radiation transmission characteristics of the body at a series of different times, each frame including an array of pixels, the video signal level at each pixel being determined by the radiation transmissivity of an elemental region of the body, and operating on said series of frames as follows:

storing a frame of the sequence;

comparing the video signal level at each pixel of another frame of the sequence with the video signal level at the corresponding pixel of the stored frame;

selecting at each said pixel a video signal level representative of the lower of the compared video signal levels;

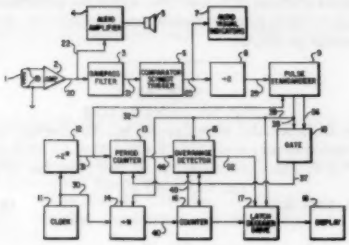
re-storing the selected video signal levels; and

displaying the selected video signal levels.

4,436,096
PORTABLE DIGITAL HEART RATE METER/STETHOSCOPE

Walter R. Dyck, Medicine Hat, and Burns R. Hay, Calgary, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Feb. 4, 1981, Ser. No. 231,442
Claims priority, application Canada, Apr. 24, 1980, 350599
Int. Cl.³ A61B 5/02
U.S. Cl. 128—689 20 Claims



1. An electronic heart rate detector comprising:

a transducer for providing an electrical signal in response to sounds, including heart sounds;

filter means for filtering said electrical signal, said filter means having a passband including frequencies characteristic of heart sounds and producing a filtered electrical signal;

means for detecting amplitude levels of said filtered electrical signal exceeding a predetermined threshold level and providing an output pulse of fixed duration in response to each amplitude level exceeding said threshold level, the output of said detecting means being connected to the input thereof, said detecting means including a comparator having an input connected to the output of said filter means for producing a first output pulse in response to each filtered electrical signal amplitude level exceeding said threshold level, the duration of said first output pulse corresponding to the duration of that portion of said amplitude level exceeding said threshold level; means for selectively modifying the duration of said output pulse; means responsive to the output of said pulse modifying means for producing a second output pulse of predetermined duration, the output of said second output pulse producing means being connected to the input of said comparator; and

means responsive to the output of said second output pulse producing means for producing a signal representative of a heart rate; and

means for displaying said signal as a detected heart rate.

4,436,097
CARDIOVASCULAR EXERCISE APPARATUS

Patrick J. Cunningham, 350 Orangethorpe Ave., #27, Placentia, Calif. 92670

Filed Jun. 7, 1982, Ser. No. 385,464
Int. Cl.³ A61B 5/02
U.S. Cl. 128—707 14 Claims

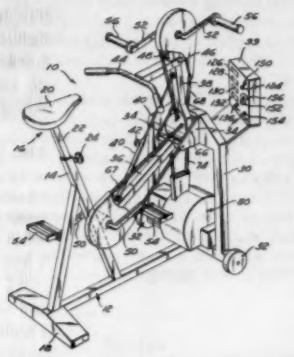
1. An improved cardiovascular exercise apparatus comprising:

a frame adapted to support a user thereon;

means carried by said frame and adapted for manual rotatable movement in a first direction for providing aerobic exercising of the upper body of said user;

means carried by said frame and adapted for manual rotatable movement in a first direction for providing aerobic exercising of the lower body of said user; and

means for applying a pre-determined force in opposition to and independent of the rotatable movement of said upper and lower aerobic exercising means, wherein said opposition force applying means comprises a hydraulic pump

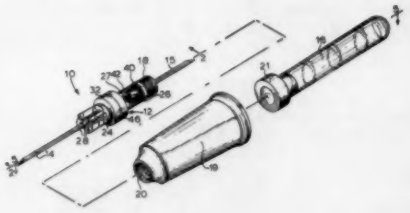


connected to rotate a common rotable shaft cooperating with said upper and lower aerobic exercising means in a secon direction, opposite to said first direction.

4,436,098
NEEDLE ASSEMBLY WITH VEIN ENTRY INDICATOR

Joseph Kaufman, Emerson, N.J., assignor to Becton Dickinson Company, Paramus, N.J.

Filed Mar. 16, 1981, Ser. No. 244,408
Int. Cl.³ A61B 5/14
U.S. Cl. 128—766 6 Claims



1. A needle assembly for collecting a single blood sample from a patient for introduction into an evacuated container, comprising

(a) a translucent housing having a forward end and a rearward end;

(b) a chamber in said housing;

(c) a first access opening in said forward end;

(d) a first cannula in fluid communication with said chamber and extending outwardly from said first access opening and adapted for insertion into a patient;

(e) a second cannula in fluid communication with said chamber and extending outwardly from said second access opening; the improvement characterized by

(f) said second cannula having a portion on the end thereof opposite to that extending outwardly from said second access opening, which extends internally into said chamber;

(g) said internally extending portion having a first and a second hole therethrough, with said second hole providing fluid communication between said chamber and the lumen of said second cannula;

(h) a vent plug of air-permeable, blood-impermeable material in liquid-tight contact with the outer surface of such internally extending portion and overlying said first hole;

(i) means for temporarily restricting blood flow covering said second hole; and

(j) said temporary restricting means comprising a compliant material forming a sealant plug permanently displaceable from covering said second hole by a negative pressure gradient applied to said second cannula, and being sufficiently pliable to deform and pass through the lumen thereof;

(k) whereby blood flowing into said chamber from said first cannula under normal tourniquet pressure is prevented by said plugs from flowing into said second cannula, but can be viewed through said translucent housing to indicate vein entry by said first cannula while air in said chamber passes through said vent plug and first hole and through said second cannula, and said sealant plug being drawn through said second hole and the lumen of said second cannula when said pressure gradient is applied for allowing blood to flow through said second cannula for collection.

4,436,099

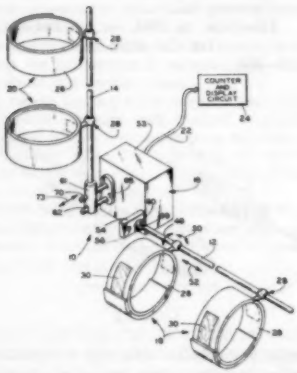
INSTRUMENT FOR MEASURING THE RANGE OF MOTION ASSOCIATED WITH A HUMAN BODY JOINT

Demetrios D. Raftopoulos, Toledo, Ohio, assignor to The University of Toledo, Toledo, Ohio

Filed Aug. 14, 1981, Ser. No. 292,899

Int. Cl.³ A61B 5/10

U.S. Cl. 128—782 **11 Claims**



1. An apparatus intended for use in measuring the relative angular displacement between two body portions connected to a common joint comprising:

a first elongate member;

a first support means adapted to be connected to a first one of two body portions connected to a common joint for supporting said first elongate member in generally spaced relation to the first body portion, said first support means maintaining said first elongate member in spaced relation to the first body portion as the first body portion is rotated about the common joint;

a second elongate member;

a second support member adapted to be connected to a second one of the two body portions for supporting said second elongate member in generally spaced relation to the second body portion, said second support means maintaining said second elongate member in spaced relation to the second body portion as the second body portion is rotated about the common joint;

means for pivotally interconnecting said first and second elongate members including an encoder means for generating an output signal representing the relative angular position between said first and second elongate members; and

means coupled to said interconnecting means and responsive to said encoder output signal for determining an angular displacement measurement between said first and second elongate members, said measurement representing the relative angular displacement between the two body portions, said measuring means including a display means for displaying said angular displacement mesurement, means for generating a reset signal defining an initial angular position between said elongate members, said measuring means responsive to said reset signal for determining said angular displacement measurement relative to said initial angular position.

4,436,100

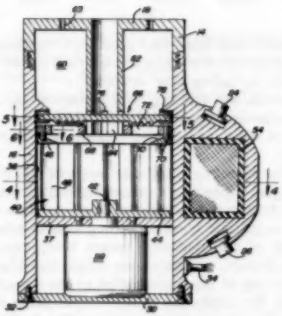
SMOKE GENERATOR

William D. Green, Jr., 8906 Camden St., Alexandria, Va. 22308

Continuation-in-part of Ser. No. 104,701, Dec. 17, 1979, Pat. No. 4,259,970. This application Apr. 6, 1981, Ser. No. 251,074

Int. Cl.³ A24F 47/00

U.S. Cl. 131—330 **16 Claims**



1. In an apparatus for generating and dispensing smoke by combustion of material on an upstream side of a gas permeable element through which a flow stream is induced by a blower, the improvement residing in a housing having a portion within which said gas permeable element is mounted downstream of the blower, a hopper within which the material is stored upstream of the blower, means for introducing the material from the hopper into the blower and an inflow conduit extending through the hopper to the blower through which ambient air is conducted to the blower separately from the material entering the blower from the hopper through the material introducing means.

4,436,101

SELF-EXTINGUISHING CIGAR OR CIGARETTE

William Seatts, 225 Eastern Parkway/Apt. #3C, Brooklyn, N.Y. 11238

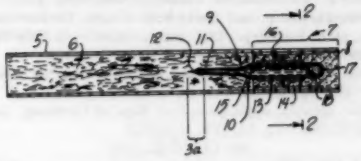
Filed Mar. 28, 1983, Ser. No. 479,278

Int. Cl.³ A24D 3/04, 1/10

U.S. Cl. 131—349 **20 Claims**

1. An elongated smoking-tobacco member comprising in combination: tubular material that is inflammable, tobacco in cut-up form compacted within tubular space of the tubular material, a compressible enclosed vessel mounted within said tubular space near one of opposite ends of the tubular material and said compressible enclosed vessel containing within enclosed space thereof a fire-extinguishing composition which when heated is decomposible into fire extinguishing product comprising a non-inflammable gas propellant that is non-toxic such that compressing pressure applied inwardly on exterior

tubular walls of the tubular material at the one end results in compacting the enclosed vessel and contents thereof to rupture



the enclosed vessel and squirt said product into said compacted tobacco.

4,436,102

COIN DISCHARGE MACHINE AND PARTITIONED CARTON

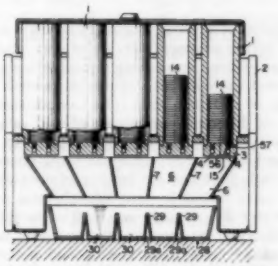
Eiichi Kokubo, and Kyoichi Osako, both of Toyko, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed May 28, 1981, Ser. No. 267,885

Claims priority, application Japan, May 30, 1980, 55/74948[U]

Int. Cl.³ G07D *1/08*

U.S. Cl. 133—2 **8 Claims**



1. A coin discharge machine which comprises: a plurality of cartridges, each accommodating coins of a given denomination; a plurality of dropping outlets communicating with respective ones of said cartridges; a coin discharge mechanism for individually discharging the lowermost coin from the coins stacked in each said cartridge and for transferring the discharged coin to one of said dropping outlets; a plurality of discharge passages separated from each other by partitions and in communication with said dropping outlets corresponding to said cartridges; and a carton including a plurality of receiving sections separated from each other by partitions, said receiving sections being disposed under respective ones of said discharge passages, and an open collecting section connected to all said receiving sections for collecting coins from said receiving sections, whereby all received coins are collected in the collecting section and are easily picked up.

4,436,103

COIN COLLECTING AND COUNTING SYSTEMS

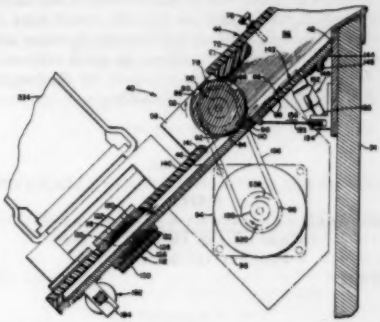
Neil M. Dick, Schenectady, N.Y., assignor to 4-D Electronics Company, Inc., Schenectady, N.Y.

Filed Nov. 19, 1980, Ser. No. 208,390

Int. Cl.³ G07D *3/16*

U.S. Cl. 133—3 D **41 Claims**

1. Coin counting apparatus or the like comprising: a coin identification system including means for generating a separate, distinct signal indicative of the value of each countable coin; means for coincidentally generating a gating signal; and means for converting each of said first-mentioned signals to a series of pulses representative of the monetary value of the coin identified by the signal, the means for generating each of the aforesaid coin value indicative signals comprising at least one light source and a detector circuit means associated with each light source for generating a signal when the optical path between the detector and the light source is interrupted, the means for generating the gating signal comprising a light emitting source and a detector circuit means as aforesaid on opposite sides of an optical path that is interruptable by any of the countable coins at the time that the signal indicative of the



value of that coin is being generated to generate a position indicative signal, the means for converting the value indicative signals to the corresponding series of pulses comprising a solid state device which changes states when any one of said value indicative signals and the amplified, position indicative signals are applied thereto, and said coin identification system further including means energizable coincidentally with the generation of coin value indicative and gating signals for providing indications that the means employed to produce said coin value indicative and gating signals has functioned properly.

4,436,104

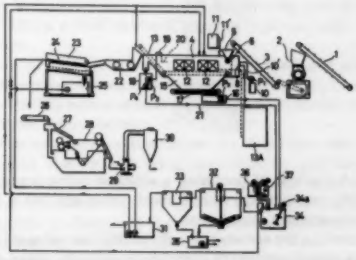
METHOD OF TREATMENT FOR RECYCLING A WASTE FILM AS A RAW MATERIAL AND APPARATUS THEREFOR

Hidehiro Kashiwagi, Tokushima, Japan, assignor to Taiyo Denko Kabushiki Kaisha, Tokushima, Japan

Division of Ser. No. 293,420, Aug. 14, 1981, Pat. No. 4,379,724. This application Jan. 3, 1983, Ser. No. 455,085

Int. Cl.³ B08B *3/02, 3/12*

U.S. Cl. 134—63 **3 Claims**



1. An apparatus for cleaning soiled, thermoplastic resin, waste film which comprises: crushing means for cutting a mass of soiled, thermoplastic resin, waste film to provide a mass of pieces of waste film; an elongated washing tank adapted to be filled with a cleaning liquid; and elongated mesh conveyor disposed within said washing tank and movable substantially horizontally therein and lengthwise thereof; feeding means for

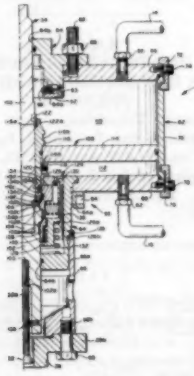
feeding the mass of pieces of waste film onto one end of said conveyor so that the mass of pieces of waste film is moved lengthwise through said tank by said conveyor; first supply means for feeding a first quantity of the cleaning liquid into said tank adjacent to said one end of said conveyor and directing the liquid lengthwise of said conveyor toward the opposite end thereof; jet means located within said tank above said conveyor and close to but upstream of the opposite end of said conveyor and adapted for directing jets of a second quantity of the cleaning fluid in a direction lengthwise of and opposite to the direction of movement of said conveyor; and ultrasonic energy transducers located on opposite lateral sides of and above said conveyor between said first supply means and said jet means for directing ultrasonic energy across said conveyor, and means located below said conveyor for discharging the soil that is removed from said waste film.

4,436,105

VALVE ACTUATOR HAVING AN ADJUSTABLE COLLET LOCK

Kip B. Goans, Harvey, La., assignor to Baker CAC, Inc., Belle Chasse, La.

Filed Nov. 4, 1981, Ser. No. 318,188
Int. Cl.³ F16K *31/122*
U.S. Cl. 137—1 **22 Claims**



22. A method of operating a shiftable valve member into wedging engagement with a fixed valve seat by a linearly shiftable actuator, comprising:

(a) moving the actuator linearly to shift the valve member to its closed position in engagement with the valve seat;

(b) engaging a cam surface on the actuator with the valve member during the final linear movement of the actuator to wedge the valve member toward its seat;

(c) engaging the actuator with a latch in its valve closed position; and

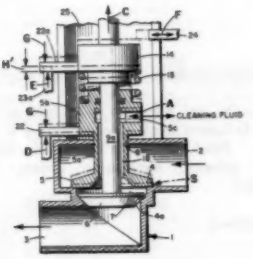
(d) automatically shifting the latch to accommodate for wear of the operative surfaces of the valve member, valve seat and actuator.

4,436,106

PIPELINE SWITCH WITH LEAKAGE CONTROL AND CLEANABLE LEAKAGE CAVITY

Otto A. P. Tuchenhagen, Lüchow-Dannenberg; Hans O. E. Mieth, Hamburg, and Herbert R. Coura, Lüchow-Dannenberg, all of Fed. Rep. of Germany, assignors to Otto Tuchenhagen GmbH & Co. KG, Fed. Rep. of Germany

Division of Ser. No. 873,068, Jan. 27, 1978, Pat. No. 4,344,453.
This application Oct. 22, 1980, Ser. No. 199,662
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1977, 2703792; Nov. 14, 1977, 2750833
Int. Cl.³ F16K *1/44*
U.S. Cl. 137—240 **6 Claims**



1. Apparatus for cleaning a liquid connection and securing a stroke and spring abutment for double seat pipeline switches with leakage control, comprising a pipeline switch housing, a pipeline switch drive mounted within said switch housing, two valve disks of different sizes, two concentrically mounted valve rods of different lengths, one of said valve rods being hollow, the one of longer length fitting within the other of shorter length, said inside valve rod being connected to said pipeline switch drive and the smaller of the two valve disks, said inside valve rod upon being lifted by said drive carrying along said valve disk of larger size, said valve disks in both the closed position and the open position enclosing between themselves a leakage cavity, one end of said hollow valve rod defining a pressing and guide part with a spring abutment and a connecting opening adapted to receive a cleaning fluid, a rod head forming a portion of the longer valve rod and defining a connecting opening, an upper spring abutment and an upper stop surface for said pressure and guide part, and a spring between said rod head and said pressing and guide part to bias them apart, said valve rod of longer length defining an axial bore with transverse holes communicating with said leakage cavity and said connecting opening in said valve head, said pressing and guide part communicating around said valve rod of longer length and through said leakage cavity with said axial bore and connecting opening of said valve head to provide a fluid passageway for said cleaning fluid through said apparatus.

4,436,107

VENTILATION VALVE

Bengt A. Persson, 28B, Corso Italia, CH-6911 Campione D'Italia, Italy

Filed Jul. 20, 1979, Ser. No. 59,399
Claims priority, application Sweden, Sep. 12, 1978, 7809583
Int. Cl.³ F16K *15/00*
U.S. Cl. 137—314 **2 Claims**

1. An air valve connectable to a pipe to relieve vacuum in said pipe while preventing escape of fluid therefrom, said valve including:

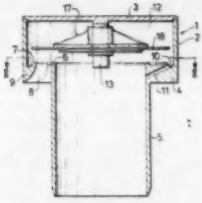
a body having an inner chamber and air inlet means for communicating said inner chamber with the ambient atmosphere,

said air inlet means including inner and outer concentrically spaced valve seats,

an annular water collecting groove immediately surrounding said outer valve seat,

a valve element displaceably mounted in said inner chamber, said valve element being normally urged to a valve closed position and being shiftable to a valve open position in response to a vacuum in said pipe,

said valve element including an annular disc formed of an elastic material with said disc having a diameter sufficient to engage said outer concentrically spaced valve seat



when the valve element is in its closed position but insufficient to cover said annular water collecting groove surrounding said outer valve seat, and

a channel connecting said water collecting groove and said pipe so that when said valve element is in its closed position with said annular disc engaging said inner and outer concentrically spaced valve seats communication is maintained between said inner chamber and said pipe to permit transmission of vacuum to said inner chamber and water in said water collecting groove to said pipe.

4,436,108

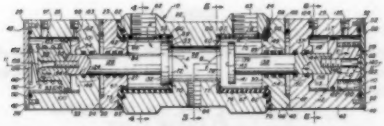
VALVE ASSEMBLY

Eugene W. Ellsworth, 1220 E. Alice St., Phoenix, Ariz. 85020

Filed Oct. 20, 1980, Ser. No. 198,853

Int. Cl.[3] F16K *19/00*

U.S. Cl. 137—375 **12 Claims**



1. A valve assembly for receiving a pressurized first fluid and a pressurized second fluid and for controllably distributing a selected said fluid to a common receiver, said valve comprising:

(a) a housing including an intermediate body portion having a first end having a first inlet chamber formed inwardly therefrom and a second end having a second inlet chamber formed inwardly therefrom, a first end portion detachably receivable to the first end of the intermediate body portion and a second end portion detachably securable to the second end of said intermediate portion,

i. a first inlet for receiving said first fluid,

ii. a second inlet for receiving said second fluid,

iii. an outlet for discharging said selected fluid,

iv. first passage means communicating between said first inlet and said outlet, said first passage means including the first inlet chamber for receiving said first fluid from said first inlet and an outlet chamber communicating between said first inlet chamber and said outlet, said first inlet chamber including detachable liner means,

v. second passage means communicating between said second inlet and said outlet, said second passage means including the second inlet chamber for receiving said second fluid from said second inlet and said outlet chamber, said second inlet chamber including detachable liner means, said detachable liner means having substantially greater erosion resistance characteristics than said housing for protecting said chamber from erosive effects of said pressurized fluids, said liner means being clamped between the intermediate body portion and the respective end portions to retain the liners in their respective inlet chambers, said housing being separable for removal of said liner means,

(b) first valve means reciprocally movable, in response to a pressurized third fluid, between an open position and a closed position for selectively controlling the flow of said first fluid through said first passage means; and

(c) second valve means reciprocally movable, in response to said third fluid, between an open position and a closed position for selectively controlling the flow for said second fluid through said second passage means.

4,436,109

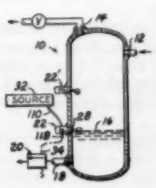
MAGNETICALLY COUPLED POSITIVE ACTING LEVEL CONTROL

Wesley L. Taylor, 8300 SW. 8, Oklahoma City, Okla. 73108

Filed Feb. 25, 1983, Ser. No. 469,847

Int. Cl.[3] F16K *31/34, 31/126*

U.S. Cl. 137—413 **16 Claims**



1. A liquid level control, comprising:

a body adapted for connection with a liquid containing vessel having a liquid drain or supply valve;

lever means pivotally supported by said body for vertical pivoting movement of its respective end portions;

float means pivotally supported within the vessel proximate said lever means for vertical pivoting movement in response to the rise and fall of liquid in the vessel;

magnetic means supported by said lever means and said float means, respectively, in magnetic inductive relation for pivoting said lever means in a direction opposite the direction of pivoting movement of said float means;

said body having a valve seat and having lateral bores forming a fluid pressure path through the body valve seat;

a source of fluid pressure connected with the liquid drain or supply valve through the lateral bores;

valve housing means secured to said body in communication with the lateral bores;

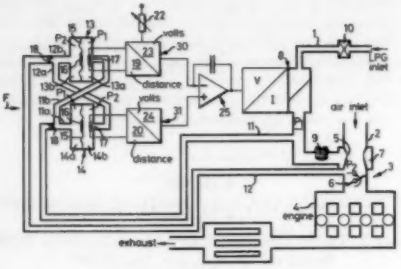
pressure-responsive valve means for receiving said fluid pressure therein and being supported by and disposed within the valve housing means for axial snap action movement toward and away from the body valve seat in response to changes in the fluid pressure within the pressure-responsive valve means; and,

nozzle valve means and a nozzle orifice being interposed in the fluid pressure path between the pressure-responsive valve means and the atmosphere, said nozzle valve means is opened and closed by said lever means as a result of changes in the fluid pressure within the pressure-responsive valve means for fluid pressure biasing said pressure-responsive valve means toward and away from said body valve seat in response to the rise and fall of liquid in the vessel.

4,436,110
PRESSURE REGULATING SYSTEMS

Derk B. Leeuwma, Terschuur, and Marius de Groot, Schyedam, both of Netherlands, assignors to Landi den Hartog BV, Netherlands

Filed Mar. 25, 1982, Ser. No. 361,752
Int. Cl.³ G05D *16/00*
U.S. Cl. 137—487.5 **12 Claims**



1. A regulating system for regulating the pressure in a fluid flow line comprising:

(i) a regulating device connected in said flow line for varying the fluid flow rate along said line,

(ii) an electro-fluid control loop comprising

(a) a feed back line connected to said flow line to provide a feed-back pressure related to to the pressure in said flow line,

(b) a control arrangement in which said feed back pressure is compared with a reference pressure to provide an electrical output signal for controlling the regulating device in the sense to maintain a predetermined relationship between said feed back pressure and said reference pressure,

characterised in that said control arrangement comprises:

(A) a pair of control chambers, each control chamber being divided into sub-chambers by a flexible diaphragm and said feed-back pressure being connected to act in one sub-chamber and the reference pressure being connected to act in the other sub-chamber,

(B) a diaphragm position senser associated with each control chamber and comprising an electric senser having a senser coil whose electrical output is representative of the distance of the diaphragm from it, the arrangement being such that a variation in said feed-back pressure in relation to said reference pressure causes said diaphragms to move in opposite directions relatively to their associated senser coils, and

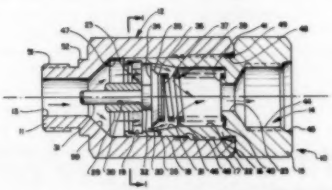
(C) comparator means for comparing the electrical outputs from said senser coils to provide an output for controlling said regulating device.

4,436,111
HYDRAULIC FUSE VALVE

Harold Gold, 3645 Tolland Rd., Shaker Heights, Ohio 44122, and Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Filed Jul. 21, 1981, Ser. No. 285,596
Int. Cl.³ F16K *17/30*
U.S. Cl. 137—498 **6 Claims**

1. A valve assembly operable to block fluid flows in excess of a predetermined fluid flow, said valve assembly comprising a housing for conducting fluid, said housing including an inner side surface which includes a converging surface area, an inlet end portion disposed at a first end of said converging surface area and having a first diameter, and an outlet end portion disposed at a second end of said converging surface area and having a second diameter which is smaller than the first diameter, a flow control member disposed in said housing, said flow control member having a circular rim with a sharp edge portion which cooperates with said inner side surface of said housing to form a first variable size orifice, said flow control member being movable relative to said housing between a first position in which said sharp edge portion of the rim of said flow control member cooperates with said inlet end portion of said inner side surface of said housing to form an annular orifice having a relatively large cross sectional area and a second position in which said sharp edge portion of the rim of said flow control member cooperates with said outlet end portion of said inner side surface of said housing to form an annular orifice having a relatively small cross sectional area, said sharp edge portion of said flow control member being

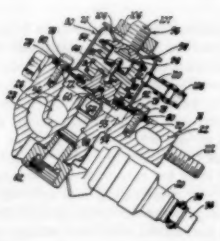


disposed radially inwardly of said converging surface area during at least a major portion of the movement of said flow control member between the first and second positions, and coil spring means disposed downstream of the rim of said flow control member for urging said flow control member toward said first position and for blocking fluid flow through said housing when said flow control member is in said second position, said coil spring means including a plurality of turns which cooperate to define a second variable size orifice through which fluid flows when said flow control member is in the first position, said turns to said coil spring means being disposed in tight abutting engagement to block fluid flow through said housing when said flow control member is in said second position.

4,436,112
FUEL PRESSURE REGULATOR

Terrance J. Atkins, Rochester, and Martin J. Field, Churchville, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 23, 1982, Ser. No. 410,651
Int. Cl.³ F16K *31/12*
U.S. Cl. 137—510 **4 Claims**



4. A fuel pressure regulator comprising a diaphragm overlying a base and defining a fuel chamber therebetween, said base including a fuel access region opening to said chamber and a fuel outlet opening from said chamber and a valve seat surrounding said outlet, said diaphragm carrying a valve member controlling fuel flow past said valve seat through said outlet, a coil spring having one end engaging said diaphragm and biasing said diaphragm to urge said valve member toward said

valve seat whereby fuel flow past said valve seat through said outlet is controlled to balance the fuel pressure on said diaphragm with the bias of said spring on said diaphragm, a spring seat engaging the other end of said coil spring, a spring housing surrounding said coil spring and said spring seat, a tie rod having one end secured to said diaphragm, the other end of said tie rod being adapted to engage said spring seat for limiting movement of said spring seat away from said diaphragm, whereby said coil spring is captured between said spring seat and said diaphragm to simplify assembly of said pressure regulator, the position of said spring seat being axially adjustable within said housing to vary the bias of said coil spring on said diaphragm, said spring housing having a base overlying said spring seat, said base being axially deformable to adjust said spring seat to the position required to establish the desired fuel pressure in said chamber, wherein said pressure regulator includes a stem extending from said base and a flange underlying said base, said stem being adapted to receive a washer overlying said base and a member effective to draw said flange toward said washer to compensate for over-deformation of said base toward said spring seat, both said base and said housing having an annular flange and said diaphragm having an annular sealing region disposed between said flanges, said sealing region having a plurality of peripherally spaced apertures receiving fasteners which clamp said sealing region between said flanges, and wherein said sealing region has slits extending peripherally between and spaced peripherally from said apertures, whereby undue distortion of said diaphragm results in separation of said diaphragm along an arcuate line between one of said slits and one of said apertures instead of along a radial line from one of said apertures, said diaphragm thereby maintaining a continuous seal between said flanges.

4,436,113

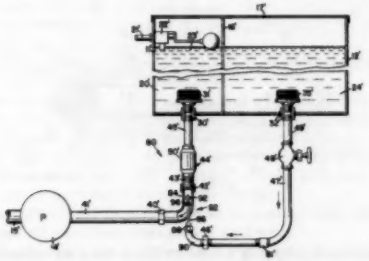
CLEANING APPARATUS

John F. Finger, Beresford, S. Dak., assignor to Sioux Steam Cleaner Corporation, Beresford, S. Dak.

Continuation-in-part of Ser. No. 191,838, Sep. 29, 1980, Pat. No. 4,368,757. This application Dec. 30, 1981, Ser. No. 335,861

Int. Cl.³ B08B *3/00*

U.S. Cl. 137—565 **13 Claims**



1. Pressure cleaning apparatus comprising, in combination:

a pair of liquid containers at substantially the same level including a water container and a detergent container;

means for replenishing and maintaining the liquid in said water container at a predetermined liquid level;

a positive displacement pump located below said containers and having an inlet and an outlet, the outlet being connected to a nozzle; and

means for supplying a mixture of water and detergent to said pump; including

(a) an outer tube having first and second straight end portions interconnected by a curved intermediate portion,

(b) an inner tube projecting through the curved intermediate portion of said outer tube in sealed relation therewith, said inner tube extending axially within one end portion of said outer tube to an outlet at a first end with an inlet being located at a second end outside said outer tube,

(c) first conduit means for connecting the second end of said outer tube to the inlet of said pump,

(d) second conduit means for connecting the second end of said inner tube to said detergent container,

(e) third conduit means for connecting the first end of said outer tube to said water container,

(f) disk means mounted inside said outer tube adjacent the first outlet end of said inner tube for defining a flow annulus with said inner tube, and

(g) first check valve means in said third conduit means for preventing backflow into said water container.

4,436,114

HYDRAULIC VALVE MECHANISM

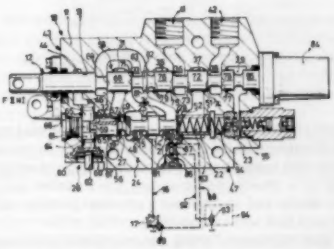
Wolfgang Kötter, Markgröningen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 11, 1981, Ser. No. 301,185

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1980, 3034859

Int. Cl.³ F15B *13/04*

U.S. Cl. 137—596 **9 Claims**



1. A hydraulic valve mechanism, comprising a housing having a first bore and a second bore; a control valve element in said first bore and having control edges for direction control and arranged so as to selectively connect motor ports in an operative position with fluid feed and return means and to block the same in a neutral position, and control edges arranged for forming throttle means; a pressure compensation valve

upstream of said throttle means and having a longitudinal valve element in said second bore and allowing with said throttle means load independent flow control; and a non-return valve downstream of said throttle means and cooperating with the motor ports, said control edges for direction control being arranged on said control valve element only at one side of said throttle means, said non-return valve being also arranged in said second bore of said housing, and said longitudinal valve element also forming a closing member of said non-return valve.

4,436,115

PRESSURE COMPENSATED FLUID CONTROL VALVE WITH MAXIMUM FLOW ADJUSTMENT

Tadeusz Budzich, Moreland Hills, Ohio, assignor to Caterpillar Tractor Company, Peoria, Ill.

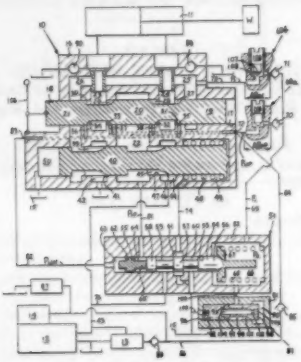
Filed Mar. 11, 1982, Ser. No. 357,037

Int. Cl.³ F15B *13/04*

U.S. Cl. 137—596.1 **9 Claims**

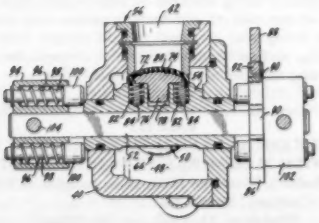
1. A control valve assembly supplied with pressure fluid by a pump, said control valve assembly comprising a housing having an inlet chamber, a supply chamber, first and second load chambers, and exhaust means connected to reservoir

means, first valve means for selectively interconnecting said load chambers with said supply chamber and said exhaust means, first positive load control orifice means responsive to movement of said first valve means and operable to meter fluid flow between said supply chamber and said load chambers, second negative load control orifice means responsive to movement of said first valve means and operable to meter fluid flow between said load chambers and said exhaust means, positive load fluid throttling means between said inlet chamber and said supply chamber, negative load fluid throttling means between said load chambers and said exhaust means, single pilot valve means operable through said positive load fluid throttling means to throttle fluid flow from said inlet chamber



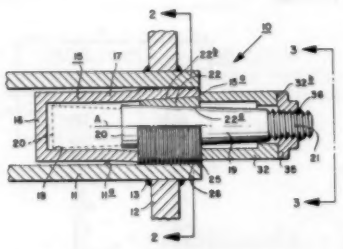
to said supply chamber and also operable through said negative load fluid throttling means to throttle fluid flow from said load chambers to said exhaust means to maintain a constant pressure differential at a preselected constant level across said single pilot valve means and to maintain a constant pressure differential across said first and said second control orifice means, and adjusting control means having means operable through said single pilot valve means to vary the level of said constant pressure differential across one of said first positive load control orifice means and said second negative load control orifice means, without thereby varying the level of said constant pressure differential across the other of the said control orifice means.

4,436,116
FOUR-WAY VALVE
Henry R. Billeter, Marco Island, Fla., assignor to Sloan Valve Company, Franklin Park, Ill.
Filed Aug. 24, 1981, Ser. No. 295,833
Int. Cl.³ F16K *11/08, 5/14*
U.S. Cl. 137—625.47 **4 Claims**



1. A four-way valve for use in a railroad air brake system including a housing having a generally cylindrical internal chamber and ports in communication therewith, two of said ports being adapted for connection to a railroad car brake pipe with an intermediate port being adapted for connection to the railroad car air brake system, a valve member movable about the axis of said chamber between a plurality of positions, there being a position to close each port and a neutral position in which all ports are in communication with said chamber, the improvement comprising a seal member having a spherical sealing surface carried by said valve member, spring means urging said seal member and sealing surface thereof outwardly of said valve member and toward said ports, and seal means for each port including a floating seal ring within each port and positioned for contact with said valve member seal member sealing surface, said floating seal rings being movable axially relative to said valve member seal member, with the outer diameter of each floating seal ring being greater than the pressure responsive sealing surface of said valve member seal member whereby if the pressure upon said floating seal ring from exteriorly of said four-way valve is greater than the pressure within said four-way valve chamber, a floating seal ring will be urged by said greater pressure into firm sealing contact with said valve member seal member, an operating rod forming a portion of said valve member and extending outwardly therefrom, from opposite sides thereof, from said housing, and spring means attached to opposite ends of said rod for holding said rod in a fixed axial position relative to said valve member.

4,436,117
LEAK RESISTANT PLUG ASSEMBLY
John E. Martin, Penllyn Pike, Springhouse, Pa. 19477
Filed Dec. 2, 1982, Ser. No. 446,153
Int. Cl.³ F16L *55/12*
U.S. Cl. 138—89 **13 Claims**



1. For use in plugging a tube having a hole, an expandable plug assembly, comprising:

a sleeve having a longitudinal axis with an endwall and a deformable tubular sidewall surrounding said endwall for cooperating therewith to form a chamber closed at one end and open at its opposite end, said sleeve having a plurality of cutting edges formed integral therewith and defined by V-shaped intersecting converging surfaces providing a slender deformable tip and a series of shallow grooves therebetween,

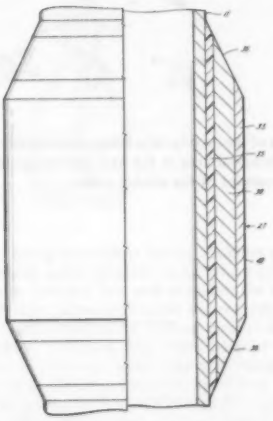
a wedge contained within said chamber, a separate expandable ring mounted in said chamber and having a tapered bore slidably receiving said wedge,

said wedge, when pulled axially of the chamber, cooperating with the ring to expand the same and thereby to expand the tubular sidewall of the sleeve outwardly whereby the cutting edges cooperate with the tube to define a labyrinth seal along the outer periphery of the sleeve.

4,436,118
SLEEVED DRILL PIPE

William R. Garrett, Houston, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Continuation of Ser. No. 197,057, Oct. 14, 1980, abandoned, which is a continuation of Ser. No. 10,235, Feb. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 818,672, Jul. 25, 1977, Pat. No. 4,171,560. This application Dec. 7, 1981, Ser. No. 328,169
Int. Cl.³ E21B *17/10*
U.S. Cl. 138—110 11 Claims



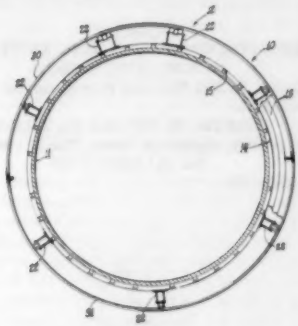
1. A drill pipe comprising:
a metal tube,
a tool joint member at each end of the tube, and
a circumferentially homogeneous metal sleeve disposed about the tube between the tool joint members and axially spaced from said members,
said sleeve being a dual metal centrifugal casting including inner and outer metal shells, the outer shell being harder than the inner shell and the inner shell being softer than the outer shell, and
means securing said sleeve to said tube comprising a layer of adhesive material therebetween,
both of said shells being circumferentially continuous,
the inner periphery of the harder shell being integral with the outer periphery of the softer shell,
the inner periphery of said inner shell having a diameter larger than the outer diameter of said tube and being everywhere out of contact therewith,
the ends of said sleeve being out of contact with said tube and all members connected to said tube,
said tube being free of stress concentrations at the ends of the sleeve which could occur if the inner shell contacted the tube, and which could occur if the ends of the sleeve contacted a member connected to the tube.

4,436,119
THERMAL ACOUSTICAL PIPE INSULATION

James E. Shahan, and Loren Pitts, both of 55 E. Jackson Blvd., Chicago, Ill. 60604

Filed Sep. 24, 1982, Ser. No. 422,462
Int. Cl.³ F16L *3/08, 59/12*
U.S. Cl. 138—149 4 Claims

1. A prefabricated jacket assembly for thermally and acoustically insulating a fluid conduit comprising:
(a) a pair of mating semicircular longitudinal sections,
(b) an outer metallic cover for each section,
(c) means for connecting the longitudinal edges of said cover of each section together to form a cylindrical jacket,
(d) insulation conforming to the configuration of said cover positioned upon the inner surface thereof,
(e) a backing element for the exposed surface of said insulation,
(f) yieldable spacing means positioned between the outer surface of the conduit to be insulated and said backing element of said insulation,
(g) a vibration damper in the assembly between the outer cover and the conduit,

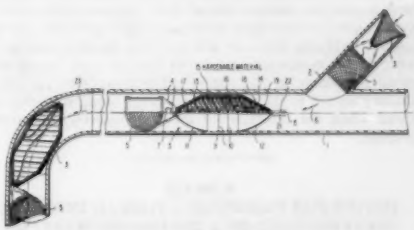


(h) a damper supporting means comprising a pair of spaced apart support members each having a portion insertable through the center of said damper from opposite ends thereof so as to be independent of each other while cooperating to maintain said damper in its relation to said backing member, and
(i) means for connecting said damper in facial contact with the inner surface of the cover with said connecting means isolated by said damper from said supporting leg portions.

4,436,120
INFLATABLE INTERNAL PIPE OBTURATOR WITH HARDENABLE CORE

Daniel Josien, Willems, and Jean-Louis Migliarese, Paris, both of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed Jun. 15, 1982, Ser. No. 388,772
Claims priority, application France, Jun. 23, 1981, 81 12265
Int. Cl.³ F16L *55/10*
U.S. Cl. 138—93 5 Claims



1. A displaceable internal obturator for a pipe, comprising:
(a) a central core (13) including a cylindrical portion (16), said core comprising a flexible envelope (14) filled with a hardenable material,
(b) a flexible inflatable sleeve (20) disposed around the cylindrical portion of said core,
(c) a flexible outer cylindrical sealing wall (9) disposed around said sleeve and retained in place at at least one longitudinal extremity thereof,
(d) a first flexible umbilical cord (21) connected to said

flexible envelope for introducing a fluid material into said envelope, and

(e) a second flexible umbilical cord (22) connected to said sleeve for inflating said sleeve with a pressurized fluid, whereby the obturator may be introduced into a pipe and displaced therealong to a desired position, whereafter the core filler material is hardened and the sleeve is inflated to urge the outer cylindrical wall into sealing engagement with the pipe inner wall to obturate said pipe.

4,436,121

PROCESS FOR MANUFACTURING AN ELASTIC OR NON-ELASTIC RIBBON

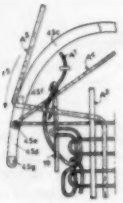
Rene Cheynet, St. Just-Malmont, France, assignor to Cheynet et ses fils, France

Filed Jan. 30, 1981, Ser. No. 230,026

Claims priority, application France, Feb. 1, 1980, 80 02511

Int. Cl.³ D03D *47/00*

U.S. Cl. 139—116 **7 Claims**



1. A process for making a woven ribbon with two stitched selvages on a ribbon loom by moving a single weft inserting member crosswise in two directions, the weft inserting member driving a single weft thread in both directions, the weft inserting member inserting a first auxiliary thread in one direction to a position outside one selvage edge and alternately driving a second auxiliary thread in the opposite direction to a position outside the opposite selvage edge, the weft inserting member engaging each of the auxiliary threads during one direction of movement and being free of such engagement during movement in the opposite direction, tying each freed auxiliary thread to the respective selvage along with the weft thread when the direction of the weft inserting member is reversed.

4,436,122

DEVICE FOR INSERTING A THREAD INTO THE WEAVING SHED OF A PNEUMATIC WEAVING MACHINE BY MEANS OF A FLOWING FLUID

Hubert P. van Mullekom, Deurne, Netherlands, assignor to Ruti-te Strake, B.V., Netherlands

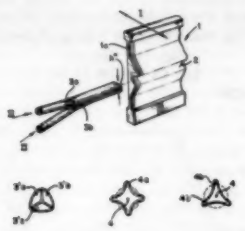
Filed Dec. 22, 1981, Ser. No. 333,634

Claims priority, application Netherlands, Dec. 31, 1980, 8007127

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—435 **5 Claims**

1. A device for inserting a thread into a transport tunnel formed in the weaving shed of a pneumatic weaving machine, the thread being inserted by a flowing fluid, said device comprising at least one injector including a unitary mixing tube through which the thread passes, the mixing tube being deformed at an exit end such that the exit cross-section is non-circular and is narrowed in at least one direction, the upstream



portion of the mixing tube being substantially circular, the total cross-sectional area at the exit end being substantially that of the remainder of the mixing tube.

4,436,123

DEVICE FOR STORING FILAMENTARY MATERIAL FOR USE ON A LOOM

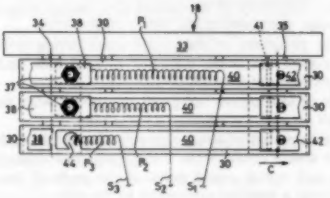
Georg Senn, and Walter Koch, both of Rüti, Switzerland, assignors to Ruti Machinery Works Ltd., Ruti, Switzerland

Filed Oct. 23, 1981, Ser. No. 314,736

Claims priority, application Switzerland, Oct. 31, 1980, 8108/80; Sep. 7, 1981, 5739/81

Int. Cl.³ D03D *47/34*

U.S. Cl. 139—452 **12 Claims**



1. A device for storing filamentary thread material for inserting weft threads in weaving machines, having a feed nozzle for feeding the thread material and air, and further having an endless thread carrier provided with a rough surface and passing the said nozzle for temporary retaining of the fed material, characterized by the fact that the feed nozzle is arranged rigidly fixed in position, and that a cover member is arranged about the horizontal part of the thread carrier, which cover member rests on the thread carrier merely under the action of its own weight and is fixed against displacement in the longitudinal and transverse directions of the thread carrier, wherein the material coming from the nozzle is introduced between thread carrier and cover member.

4,436,124
PROCESS AND APPARATUS FOR BOTTLING OXYGEN-SENSITIVE LIQUIDS

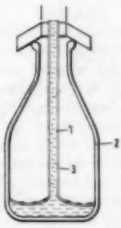
Wolfgang Borstelmann, Dortmund, Fed. Rep. of Germany, assignor to Holstein und Kappert GmbH, Dortmund, Fed. Rep. of Germany

Filed Jan. 15, 1982, Ser. No. 339,702

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1981, 3102678

Int. Cl.³ B65B 31/00

U.S. Cl. 141—5 **7 Claims**



2. Apparatus for filling a container having a bottom with an oxygen-sensitive liquid under pressure comprising liquid feed means adapted to be inserted into said container for feeding liquid into said container from said bottom thereof, said liquid defining a rising liquid level during feeding thereof through said liquid feed means, buffer gas feed means adapted to feed into said container a buffer gas layer over said rising liquid level during feeding of said liquid by said liquid feed means, said buffer gas feed means being movable together with said rising liquid level within said container during feeding of said liquid.

3. In a process for filling containers with an oxygen-sensitive liquid under pressure, said liquid defining a surface of said liquid during said filling process, the improvement which comprises that a buffer layer of gas is maintained over said surface of said liquid throughout said filling process to maintain said liquid separated from any oxygen which may be present within the container, said buffer gas being continuously delivered to said container during the filling process, and that said container is depressurized with said delivery being maintained during said depressurizing of said container.

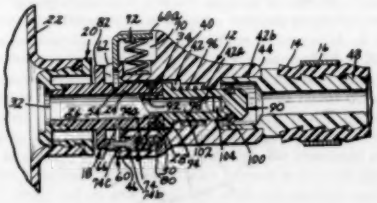
4,436,125
QUICK CONNECT COUPLING

Brian J. Bienkush, Maple Grove, Minn., assignor to Colder Products Company, St. Paul, Minn.

Filed Mar. 17, 1982, Ser. No. 359,071

Int. Cl.³ B67C 9/00

U.S. Cl. 141—330 **8 Claims**



1. A quick connect/disconnect coupling assembly, comprising:

(a) a female coupling member having a front end and a back end, said female coupling member defining a path for the flow of fluid therethrough;

(b) a male coupling member having a front end and a back end and defining a path for the flow of fluid therethrough, said male coupling member including a hollow tubular portion defining an axial bore adjacent said front end, said tubular portion being enclosed at the front end thereof by a penetrable membrane to seal off said fluid flow path, said tubular portion being constructed and arranged for removeable insertion a predetermined distance into the front end of said female coupling member, said female coupling member defining an axial tubular bore within which said tubular portion of said male coupling member is concentrically received, said tubular portion of said male coupling member including a ring-like seal about its circumference near the front end of said male coupling member for providing a fluid tight seal between the outside surface of said tubular portion and the inside surface of said tubular bore of said female coupling member upon insertion of said male coupling into said female coupling member;

(c) a valve assembly adapted for reciprocating longitudinal axial movement within the tubular bore of said female coupling member between a front end position and a back end position, said valve assembly being constructed and arranged for engaging said male coupling member upon insertion of said male coupling member into said female coupling member whereby said valve assembly is caused to move toward the back end of said female coupling member into said back end position, said valve assembly at a front end including a hollow needle-like member adapted to puncture the penetrable membrane of said male coupling member, whereby fluid flow from said male coupling member to said female coupling member is enabled upon removeable attachment of said male coupling member to said female coupling member, said valve assembly including means for sealing off the fluid flow path through said female coupling member when said valve assembly is in said front end position, whereby said fluid flow through said female coupling member is prevented when said male coupling member is removed therefrom;

(d) locking means proximate the front end of said female coupling member for releasably locking said male coupling member in said female coupling member, said locking means being activated upon insertion of said male coupling member a predetermined distance into said female coupling member;

(e) release means interconnected to said locking means for deactivating said locking means whereby said male coupling member is released by said locking means; and,

(f) spring biasing means adapted for biasing said valve assembly toward the front end of said female coupling member into said front end position, whereby when said male coupling member is released from said female coupling member, said valve assembly is biased into said front end position thereby preventing the flow of fluid through said female coupling member.

4,436,126
WOOD PLANING MACHINE

Peter Lawson, Campinas, Brazil, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Sep. 17, 1981, Ser. No. 303,318

Int. Cl.³ B27C 1/00

U.S. Cl. 144—130 **4 Claims**

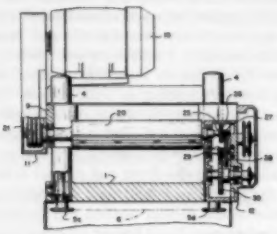
1. A thicknessing machine having a plurality of corners for wood comprising,

(a) an elongated bed over which the wood passes,

(b) an upper housing spaced from said elongated bed,

(c) cutter and drive rollers mounted in said upper housing for rotation about separate parallel axes,

(d) a plurality of hollow pillars each containing a threaded shaft for adjusting said upper housing, and locating the



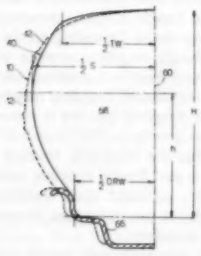
vertical position of said upper housing on said hollow pillars with respect to said elongated bed.

4,436,127

ADVANCED PROFILE RADIAL TIRE HAVING RELATIVELY HIGH INFLATION PRESSURE

Manuel G. Balbis, and Colin V. King, both of Rome, Italy, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 11, 1982, Ser. No. 357,028
Claims priority, application Italy, Apr. 29, 1981, 67578 A/81
Int. Cl.³ B60C *3/00, 15/06*
U.S. Cl. 152—209 R **6 Claims**



1. In an inflated tire and rim assembly wherein the tire includes a tread portion, a tread reinforcement in the tread portion, a pair of sidewalls respectively on opposite sides of said tread portion, a pair of bead portions respectively at the inner edges of said sidewalls, a lower sidewall reinforcement adjacent each of said bead portions and sidewall inner edges, a bead reinforcement in each of said bead portions, and a radial carcass reinforcement extending from one bead portion to the other, the improvement being in the profile of said tire characterized in:

a. the tire having a section height H and a section width S, the aspect ratio (H/S) being in the range from about 0.80 to about 0.90;

b. the maximum section width (S) being located at a height (h) of more than 55 percent of said section height (H), with the design width (DRW) of said rim being about 65 percent of said section width (S);

c. the width (TW) of said tread portion being greater than 70 percent of said section width (S);

d. the inflation pressure of said tire being a minimum of about 25 percent greater than the inflation pressure of a conventional profile tire of equivalent size, said assembly being operable at said greater inflation pressure at about the same load capacity and at about the same tire deflection as a conventional profile tire while having acceptable ride comfort characteristics; and

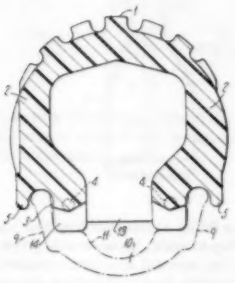
e. said lower sidewall reinforcement providing relative stiffness in its area of location.

4,436,128

TIRES FOR WHEELS

Simon P. Pointer, 31 Eaton St., Norwich, NR4 7LD, England

Filed Jul. 29, 1982, Ser. No. 402,971
Claims priority, application United Kingdom, Jul. 30, 1981, 8123406
Int. Cl.³ B60C *15/00, 11/00, 13/00*
U.S. Cl. 152—209 R **5 Claims**



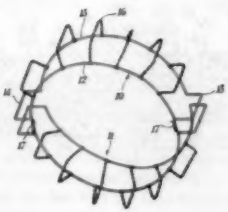
1. A tubeless tire for a wheel comprising a tread portion, and sidewall portions terminating in bead portions to rest in the well of a wheel rim to receive the tire, lips spaced outwardly from the bead portions and integral with the sidewall portions to overlie respective outer surfaces of the wheel rim flanges and form, with the bead portions, recesses to receive the peripheral edges of the rim flanges, a plurality of equispaced venting channels extending across each bead portion, the channels in one bead portion, and a plurality of equispaced partitions extending transversely between the side walls and radially inwardly from the inner surface of the tread portion to divide the tyre interior into a series of empty cells each of which extends between the side walls and are entirely devoid of solids within the sidewalls and tread portion.

4,436,129

COMPOSITE SEMIRIGID SNOW CHAIN, WITHOUT REAR HOOKING MEANS, FOR MOTOR VEHICLES

Aldo Razza, No. 63, Via Pio Foa, Rome, Italy

Filed Dec. 15, 1982, Ser. No. 449,958
Claims priority, application Italy, Dec. 18, 1981, 362217/81[U]
Int. Cl.³ B60C *27/00*
U.S. Cl. 152—213 A **3 Claims**



1. A snow chain for motor vehicles having two parts adapted to be applied to a wheel independently of each other, means for connecting said parts together on the wheel, each of said parts including a frame which is essentially rigid but has a limited flexibility formed of two semicircular bars lying in

spaced radial planes and two U-shaped bridge elements connecting said bars at their ends for maintaining the bars in spaced radial planes, said parts having flexible friction elements which are connected to and arranged in spaced relation between said U-shaped bridge elements, an elastic connecting element connecting said two parts together at each end thereof and stop means for limiting the stretching of said elastic element, said parts being located around substantially the entire surface of the wheel.

4,436,130
PNEUMATIC RADIAL TIRE HAVING AN EXCELLENT SIDE-CUT RESISTANT PROPERTY

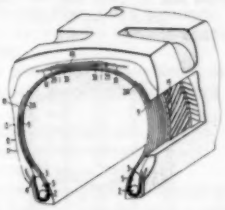
Yasuo Suzuki, Akigawa; Masaru Abe, Sayama, and Toshiro Tezuka, Higashi-Murayama, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 244,481, Mar. 16, 1981, abandoned, which is a continuation of Ser. No. 63,641, Aug. 1, 1979, abandoned, which is a continuation of Ser. No. 773,733, Mar. 2, 1977, abandoned. This application Sep. 9, 1982, Ser. No. 416,520

Claims priority, application Japan, Mar. 4, 1976, 51-22651

Int. Cl.³ B60C *9/04, 9/08, 9/14*

U.S. Cl. 152—353 R **15 Claims**



1. An off-road pneumatic radial tire having an excellent sidecut resistant property, comprising; a radial carcass body composed of at least one rubberized ply layer each containing metal cords embedded therein and a belt superimposed about said radial carcass body and having a high rigidity, said tire comprising 1 or 2 extensible and compressible rubberized side portion reinforcing layers independently arranged at each side portion of the tire and on one side of said carcass at that area of each side portion of the tire which is inclusive of at least the maximum cross section position of the carcass and each containing a reinforcing element embedded therein and composed of a bundle of helically formed filaments, each bundle having 3 to 30 filaments and each bundle formed by merely assembling together said helically formed filaments without twisting at random wherein each filament is formed of a steel wire material, said reinforcing elements each having the helically formed filament having a diameter ϕ in the range of 0.1 mm to 1.0 mm, and an average diameter D of an outer contour projected on a plane perpendicular to the axial direction of one pitch of the filament defined by Dmax + Dmin/2 in the range of 2ϕ to 20ϕ, an elongation at tensile breaking strength which is at least 1.5 times larger than that of said metal cord of the radial carcass body, wherein said reinforcing element of each side portion reinforcing layer located at the maximum width position of the carcass in a vertical center section through the rotational axis of the tire is inclined at 0° to 70° with respect to a radial plane which is projected on and in parallel with said vertical center section, wherein a ratio δ of a space formed between the two adjacent reinforcing elements to a pitch S in mm between the midlines of said reinforcing elements is given by:

$$\delta = \frac{S - (D + d - \phi)}{S} = 0.11 \text{ to } 0.78$$

where, d is an effective diameter in mm of said reinforcing element which is given by:

$$1.25 \times \sqrt{N} \times \phi$$

where, N is the number of filaments constituting said reinforcing element, a shock absorbing sheet interposed between said carcass ply and each of said side portion reinforcing layers and said off-road tire configured for mounting on a rim of at least 13.00×25.

4,436,131
PNEUMATIC RADIAL TIRES

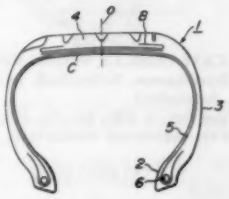
Yutaka Yamaguchi, Tokorozawa; Nobuyuki Koizumi, Higashimurayama; Tamio Araki, Fuchu; Koichi Kojima, Higashimurayama, and Nobumasa Ikeda, Kodaira, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Sep. 24, 1982, Ser. No. 422,912

Claims priority, application Japan, Jan. 29, 1982, 57-9916[U]

Int. Cl.³ B60C *9/00*

U.S. Cl. 152—361 FP **6 Claims**



1. In a pneumatic radial tire comprising a tread portion, a pair of sidewall portions extending from both sides of the tread portion, a pair of bead portions extending from the sidewall portions, a carcass of radial structure extending from one bead portion to the other and composed of at least one rubberized ply containing cords therein, and a belt superimposed about a crown portion of the carcass and consisting of a first belt body composed of a single ply containing metal twisted cords arranged at an inclination angle of 5°–25° with respect to the equatorial plane of the tire and embedded in a coating rubber, both end portions in widthwise direction of which being folded on the remaining central base portion thereof, and a second belt body composed of at least one rubberized ply containing inextensible cords inclined with respect to the equatorial plane and crossed with the cords in the base portion of the first belt body, the improvement in which the coating rubber for the first belt body has a dynamic modulus of 160–400 kg/cm² and a thickness of rubber interposed between the cords in the base portion and the cords in the folded portion is within a range of 1.3–4.5 times an average diameter of the cords and is not less than 2 times a thickness of the coating rubber located outside the cords in the base portion opposite to the folded portion.

4,436,132
BEAD RINGS FOR TIRES

Jean-Pierre Cesar, Sayat, and Jean-Louis Charvet, Clermont-Ferrand, both of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Jun. 4, 1982, Ser. No. 384,915

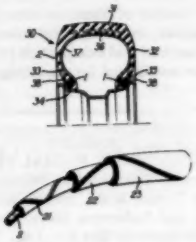
Claims priority, application France, Jul. 20, 1981, 81 14228

Int. Cl.³ B60C *15/04;* **B29H** *17/32*

U.S. Cl. 152—362 R **10 Claims**

1. A bead ring for a tire bead formed of an annular core and an assembly of wires arranged on the core and surrounding it, characterized by the fact that the assembly of wires is constituted of at least one layer formed of at least one strand of continuous nonmetallic filaments which are practically parallel to each other and free of impregnation, which strand is wound around the core in the same direction to a layer thickness at

least equal to twice the average diameter of a filament and with a winding pitch p less than $2\sqrt{ac}$ (in which a is the radius of a circle equivalent to the perimeter of the cross section of the

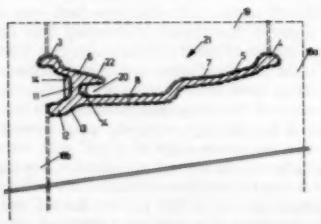


core and c is the average circumference of the core) and a twist in the same direction as the winding and equal to one turn per pitch.

4,436,133
CAST VEHICLE WHEEL RIM

Jakob Rohr, Schaffhausen, Switzerland, assignor to George Fischer Ltd., Switzerland

Filed Nov. 6, 1981, Ser. No. 318,943
Claims priority, application Switzerland, Nov. 13, 1980, 8421/80
Int. Cl.³ B60B *21/02*
U.S. Cl. 152—381.3 **11 Claims**



1. A unitary, cast vehicle wheel rim, particularly for use with a tubeless tire, comprising:

a rim profile portion formed with a radially outwardly facing surface having a first outer tip, a first conical portion, a drop center, a shoulder, a second conical portion and a second outer tip in sequence axially, said first conical portion partially overlying and spaced radially relative to said drop center;

a support ring axially offset adjacent said first conical portion and formed as an axial extension of said drop center, said support ring having a conical surface for mounting the rim on a support device, such as a spider; and

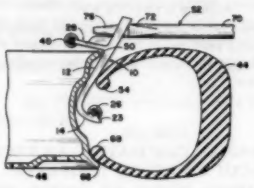
a generally radially extending annular crosspiece interconnecting said support ring with the center of said first conical portion, and thereby, with the remainder of the rim.

4,436,134
TIRE TOOL

Dolphard Gaither, Rte. 1, Box 43, Cameron, Okla. 74932

Filed Nov. 24, 1981, Ser. No. 324,620
Int. Cl.³ B60C *25/04*
U.S. Cl. 157—1.3 **12 Claims**

1. A tool kit comprising a tool for removal of a tire from a wheel rim, lever means, and helper means, said tire tool comprising a main body portion having a bore provided in the proximity of one end thereof, an arcuate flange provided at the opposite end thereof, a plurality of first roller members journalled at the outer end of the arcuate flange, an arm member

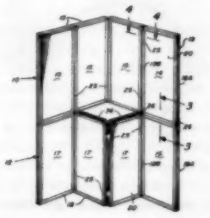


extending outwardly from one face of the main body portion and in a direction opposite the arcuate flange, and a plurality of second rollers journalled at the outer end of the arm member.

4,436,135
PORTABLE DISPLAY SYSTEM

Willy Ytter, Stockholm, Sweden, assignor to Extraversion, Inc., New York, N.Y.

Filed Jan. 28, 1980, Ser. No. 116,102
Int. Cl.³ A47G *5/00*
U.S. Cl. 160—135 **11 Claims**



1. A portable display system comprising:

a plurality of panel assemblies each comprising a detachable front panel and a detachable rear panel, and border strip means including at least first and second peripheral support members for supporting and positioning the detachable panels in a substantially parallel and confronting relationship;

said first peripheral support means at least partially removably positioned along at least one outer edge of said detachable front and rear panels, said second peripheral support means positioned along the other edges of said detachable front and rear panels;

hinge means for interconnecting the plurality of panel assemblies with said panel assemblies being divided into first and second arrays;

said arrays each including a main panel assembly and at least one other connected panel assembly;

said hinge means comprising at least first and second pairs of side hinges and a pair of corner hinges,

means securing said first pair of side hinges to side disposed second peripheral support means of adjacent panel assemblies of the first array;

means securing said second pair of side hinges to side disposed second peripheral support means of adjacent panel assemblies of the second array;

means securing said pair of corner hinges between main panel assemblies of first and second arrays with one of said corner hinges disposed along said side disposed second peripheral support means of first and second array main panel assemblies, and the other of said corner hinges disposed along opposite side disposed second peripheral

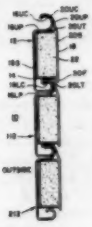
support means of first and second array main panel assemblies.

4,436,136

INSULATED SLAT

Robert C. Downey, Jr., Columbus, Ohio, assignor to Harsco Corporation, Camp Hill, Pa.

Filed Dec. 23, 1981, Ser. No. 333,805
Int. Cl.³ A47H 1/13
U.S. Cl. 160—232 17 Claims



1. A door including at least a first slat assembly and a second slat assembly, each slat assembly comprising:

(a) a slat including

(i) a generally planar side portion having an interior surface on one side and an exterior surface on the other side,

(ii) an upper end curved portion,

(iii) a lower end curved portion;

(b) an insulation cover piece including

(i) a generally planar side portion having an interior surface facing towards said slat and an exterior surface facing away from said slat,

(ii) an upper end curved portion disposed at least partially around said upper end curved portion of said slat, said upper end curved portion of said cover piece held to said upper end curved portion of said slat by its curvature around said upper end curved portion of said slat,

(iii) a generally planar upper end transverse portion extending from said side portion of said insulation cover to said side portion of said slat, and

(iv) a generally planar lower end transverse portion extending from said side portion of said insulation cover to said side portion of said slat; and

(c) insulation disposed in a cavity between said side portion of said slat and said side portion of said insulating cover, said cavity bounded by said upper transverse portion and said lower transverse portion; and

wherein said lower end curved portion of said slat of said first slat assembly is disposed at least partially within said upper curved portion of said slat of said second slat assembly for relative rotation between said first and second slat assemblies.

4,436,137

WINDOW INSULATION SYSTEM

Hugh G. Charles, 41 Coed-y-Glyn, Sontley Rd., Wrexham, Clwyd, England

Filed Apr. 2, 1982, Ser. No. 364,810
Claims priority, application United Kingdom, Apr. 4, 1981, 8110618
Int. Cl.³ E06B 9/17
U.S. Cl. 160—242 5 Claims

1. A window insulation system for thermally insulating a rectangular window assembly comprising:

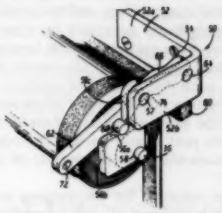
(a) a roller blind mechanism carrying a transparent plastics blind;

(b) means for mounting said roller blind mechanism to a window frame above said window assembly;

(c) VELCRO strip means on the longitudinal side edges and free transverse edge of said blind;

(d) mating VELCRO strip means on the frame around the vertical side edges and the horizontal lower edges thereof; and

(e) means enabling the roller blind mechanism to be displaced on said mounting means between a first position, in which the roller blind mechanism is spaced from the frame to enable the blind to be retracted and extended, and a second position wherein the roller blind periphery is in sealing engagement with said frame above said window assembly, the latter means comprising:



(1) respective camming means pivotally interconnected with said mounting means at the opposite ends of the roller blind mechanism,

(2) said camming means each including a pair of camming surfaces which are approximately mutually perpendicular;

(3) means journaling said blind mechanism between the two camming means;

(4) lever means pivotally interconnected with said mounting means; and

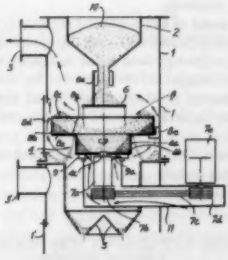
(5) cam follower means carried by said lever means and engaging said camming surfaces said cam followers comprise a projection on each of said lever means.

4,436,138

METHOD OF AND APPARATUS FOR RECLAIMING MOLDING SAND

Toshio Kondo, Yokohama, Japan, assignor to Nippon Chuzo Kabushiki Kaisha, Kanagawa, Japan

Continuation-in-part of Ser. No. 171,404, Jul. 23, 1980, abandoned. This application Feb. 22, 1982, Ser. No. 351,327
Int. Cl.³ B02C 19/12
U.S. Cl. 164—5 4 Claims



1. A molding sand reclamation apparatus comprising:

(a) a cylindrical housing having an opening for dust exhaustion in an upper part thereof;

(b) a feed opening for supplying unreclaimed sand, located in the upper part of said cylindrical housing;

(c) a rotary drum positioned concentrically below a distributor for receiving distributed unreclaimed sand and having a cylindrical wall, a flat base, and no top such that said

distributed unreclaimed sand is centrifugally scattered over the top of said cylindrical wall when said rotary drum rotates;

(d) a distributor rigidly fixed to said feed opening so dimensioned as to enable distributing said unreclaimed sand fed by said feed opening within the perimeter of the rotary drum, said distributed unreclaimed sand falling in a cylindrical curtain from the outer periphery of said distributor;

(e) an annular C-shaped rack means, having a lower flange, a cylindrical wall, and an upper flange, concentrically mounted above said rotary drum for receiving said scattered unreclaimed sand and retaining said sand in place, said lower flange of said rack means being separated by a first predetermined distance from the top of said cylindrical wall of said rotary drum, and said cylindrical wall of said rack means being separated by a second predetermined distance from said cylindrical housing;

(f) a fan attached integrally to the lower surface of said rotary drum, such that the axis of rotation of said fan and the axis of rotation of said rotary drum are in alignment;

(g) a suction pipe having one end thereof connected to a central suction port of said fan and the other end thereof which communicates with the outside of said cylindrical housing; and

(h) a discharge opening for discharging reclaimed sand, located in the lower part of said cylindrical housing,

wherein said first predetermined distance is adjustable by adjusting said lower flange of said rack means so that the amount of distributed unreclaimed sand escaping through said first predetermined distance per unit time is less than the amount of unreclaimed sand being supplied through said feed opening per unit time, thereby ensuring that scattered unreclaimed sand overflows the outer periphery of said rack means.

3. A process for reclaiming molding sand comprising the steps of:

(a) feeding unreclaimed sand through a feed opening onto a cylindrical distributor;

(b) allowing the fed sand to overflow the periphery of said distributor and to fall in a cylindrical curtain of a smaller diameter into a rotating rotary drum having a larger diameter;

(c) scattering sand centrifugally by rotation of said rotary drum so that the scattered sand rubs against stationary sand pressed by centrifugal force against the cylindrical wall of said rotary drum, thereby producing shearing forces between the scattered and stationary layers of sand;

(d) allowing the scattered sand to overflow the periphery of said rotary drum and to escape through a space defined by the top of the cylindrical wall of said rotary drum and the lower flange of an annular C-shaped rack means, such that the rate of escape is less than the rate of supply through said feed opening;

(e) holding some of the scattered sand stationary by means of said rack means and allowing the scattered sand which did not escape through said space to scatter further as a result of the centrifugal force produced by said rotating rotary drum, thereby producing additional shearing forces between the further scattered and the stationary layers of sand; and

(f) overflowing the further scattered sand over the periphery of said rack means.

4,436,139

METHOD AND APPARATUS FOR MANUFACTURE OF BRAKE DRUMS

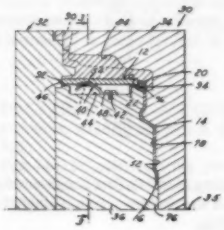
Don S. Strader, Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Filed Jul. 20, 1981, Ser. No. 284,932
Int. Cl.³ B22D *19/08*
U.S. Cl. 164—112 **6 Claims**

1. Molding apparatus for manufacturing brake drums of the type which include a preformed brake liner in the form of an annular hoop and a shell cast around said liner, said apparatus comprising a pair of die sections which collectively define a mold cavity having a central axis in a closed position of said die sections, and a centering mandrel carried by one of said die sections for receiving a brake liner so as to define one wall of said cavity, said centering mandrel comprising spring means disposed in a circumferential array around a radial portion of said mandrel for engaging the braking surface of a liner mounted on said mandrel so as to center said liner with respect to said axis.

4. A method of manufacturing brake drums of the type which include a preformed brake liner and a shell cast around said liner, said method comprising the steps of:

(a) providing a pair of die sections, at least one of which is movable with respect to the other along an axis common to said die sections between an open position and a closed



position in which said die sections cooperate to form a mold cavity for said shell, one of said die sections including a mandrel with radially oriented self-centering means carried thereon and adapted for internal engagement with a brake liner,

(b) with said die sections open, locating a said preformed brake liner on said mandrel over said self-centering means such that said means cooperates with said liner to fixture said liner in a substantially cylindrical configuration coaxially with said axis,

(c) closing said die sections such that said brake liner is fixtured within said cavity to form one wall of said cavity, and then

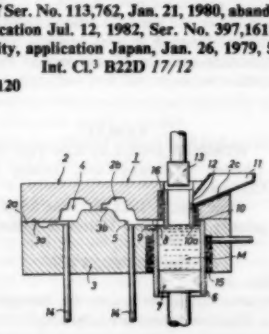
(d) casting said shell within said cavity around said brake liner.

4,436,140

METHOD OF CHARGING MOLTEN METAL INTO A VERTICAL DIE CASTING MACHINE

Masuo Ebisawa, Kawagoe, and Tetsuya Suzuki, Oimachi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 113,762, Jan. 21, 1980, abandoned. This application Jul. 12, 1982, Ser. No. 397,161
Claims priority, application Japan, Jan. 26, 1979, 54-7888
Int. Cl.³ B22D *17/12*
U.S. Cl. 164—120 **5 Claims**



1. A method of charging molten metal into a vertical die casting machine comprising: a die having an upper passageway

and a lower passageway defined therein, said upper passageway including an upper sleeve disposed therein and an upper plunger disposed in said upper passageway for compressing said molten metal, said lower passageway including a lower sleeve and a lower plunger disposed in said lower passageway for receiving said molten metal, both of said plungers cooperating to charge molten metal stored therebetween into a mold cavity defined in said die, and the gap between said upper and lower sleeves defining an inlet passage to said mold cavity, the method comprising the steps of:

lowering said upper plunger to a predetermined position;

raising said lower plunger to urge said molten metal upwardly and into said mold cavity;

actuating said upper plunger to start compressing said molten metal sandwiched between said upper and lower plungers substantially before movement of said lower plunger has been completed; and

completing compression of said molten metal by said upper plunger substantially after movement of said lower plunger has been completed, and prior to solidification of said molten metal between said plungers.

4,436,141

MOLDING SAND BLOWERS

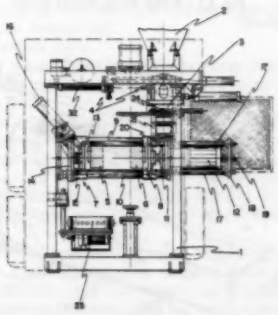
Agustin Arana Erana, Zorrostea, 4 Poligono Industrial Ali-Gobeo, Victoria, Spain

Filed Feb. 18, 1981, Ser. No. 235,732

Claims priority, application Spain, Feb. 20, 1980, 488791; Apr. 9, 1980, 249912[U]

Int. Cl.³ B22C *15/22*

U.S. Cl. 164—201 **2 Claims**



1. A blowing sand molding machine comprising:

a main frame having mounted on an upper portion thereof a hopper for storing sand to be molded;

support means mounted on said main frame and consisting essentially of first and second parallel guide bars extending along a front portion and a rear portion, respectively, of said main frame, said first guide bar being positioned at a level substantially lower than said second guide bar;

master plates mounted on said guide bars for movement along said guide bars between a closed position whereat said master plates define a mold cavity and an open position;

a blower cartridge mounted on said main frame for movement between a first position beneath said hopper to receive therefrom a charge of sand to a second position above said mold cavity when said master plates are in said closed position;

means for directing automatically pressurized gas into said blower cartridge when said blower cartridge is in said second position thereof, and thereby for blowing the charge of sand in said blower cartridge into said mold cavity, said directing and blowing means comprising a nozzle extending horizontally from said blower cartridge and communicating with the interior thereof, a flexible duct adapted to be connected to a source of pressurized gas, and a block member permanently connected to said flexible duct and having defined therein a horizontally extending orifice, said block member being mounted on said main frame at a position such that when said blower cartridge moves to said second position thereof said nozzle of said blower cartridge simultaneously automatically is inserted into said orifice in said block member; and

means for mounting said block member at said position thereof for vertical displacement with said blower cartridge, said mounting means comprising a support fixed to said main frame and including vertical guides, said block member having rollers mounted for movement in said vertical guides, spring means mounted on said support and acting on said block member for urging said block member upwardly along said guides, and abutment means mounted on said support at a position to be abutted by said block member under the spring force of said spring means, the vertical position of said abutment means being adjustable.

4,436,142

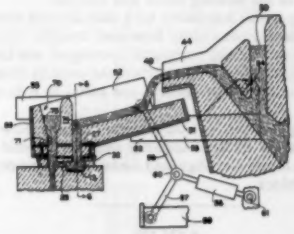
METHOD AND APPARATUS FOR MAKING DUCTILE IRON CASTINGS

David S. Mather, Montreal, Canada, assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Nov. 9, 1981, Ser. No. 319,217

Int. Cl.³ B22D *27/20*

U.S. Cl. 164—337 **7 Claims**



1. The combination of an open mold containing a nodulizing treatment chamber and a casting cavity inlet adjacent the treatment chamber and spaced therefrom by one portion of an upper mold surface, and a sealing member mounted for movement toward and away from the mold for respectively engaging and disengaging the upper surface of the mold;

said sealing member having a lower surface opposing the upper mold surface which extends to cover the underlying treatment chamber and the casting cavity inlet, said sealing member having a portion which is raised from the mold upper surface portion opposite the treatment chamber to form a first conduit for the flow of nodulized molten metal therefrom to said casting cavity inlet when the member engages the mold;

said sealing member having a second conduit extending upwardly from the raised portion of said sealing member for conveying molten metal to said treatment chamber; and

reservoir means mounted on the sealing member communicating with said first conduit for containing the nodulized metal received from said first conduit.

4,436,143

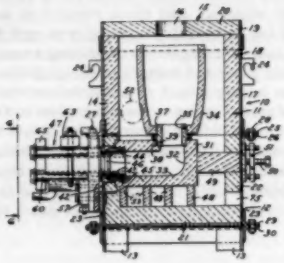
HORIZONTAL CONTINUOUS CASTING APPARATUS

Gus Sevastakis, 5645 Angola Rd., Toledo, Ohio 43615

Continuation of Ser. No. 255,559, Apr. 20, 1981, abandoned. This application Jun. 7, 1983, Ser. No. 500,227

Int. Cl.³ B22D 11/00

U.S. Cl. 164—440 10 Claims



1. A horizontal continuous casting apparatus comprising

a furnace having a bottom wall, side walls and a top wall,

a holding block supported within said furnace and having a vertical opening and a horizontal opening communicating with the vertical opening,

the vertical opening extending upwardly,

a crucible mounted within said furnace and having a downwardly extending opening,

means for providing communication between the opening of the crucible and the vertical opening of said block,

a side wall of said furnace having a horizontal opening,

a die associated with said horizontal opening in the side wall and extending externally of said furnace,

means for providing communication between the horizontal opening of the holding block and said die,

and cooling means associated with said die such that molten metal passes downwardly from said crucible through the vertical opening and horizontal opening of said block and, in turn, through said die wherein the cooling means function to progressively solidify the metal as it is removed from the die,

a mounting bracket on said furnace defining downwardly and inwardly inclined surfaces engaged by said cooling means to locate and align said die with said opening in said holding block.

4,436,144

PRISMATIC BRICK OF REFRACTORY MATERIAL

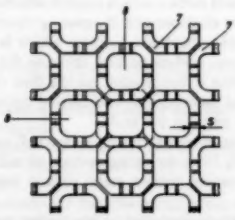
Josef Horak, Vienna, Austria, assignor to Veitscher Magnesitwerke-Actien-Gesellschaft, Vienna, Austria

Continuation of Ser. No. 119,796, Feb. 8, 1980, abandoned. This application Feb. 5, 1982, Ser. No. 346,225

Claims priority, application Austria, Feb. 20, 1979, 1302/79

Int. Cl.³ F28D 17/00

U.S. Cl. 165—9.1 2 Claims



1. A checkerwork for chambers of a glass melting furnace comprised of centrally positioned prismatic bricks of refractory material surrounded by edge and corner bricks, all of the centrally positioned prismatic bricks having a bottom surface, a top surface, a longitudinal axis extending between the surfaces, and a through passage of tetragonal cross-section coaxial with the longitudinal axis, the passage having a hydraulic diameter of 120 to 200 mm, the hydraulic diameter being defined by the relationship: four times the passage cross-section divided by the periphery of the passage cross-section, and the ratio of the hydraulic diameter to the wall thickness of the brick, measured in the direction of the main axes extending parallel to the bottom and/or top surface being between 3 and 5, and the periphery of each brick defining sharp corners and the periphery of the through passage of each brick defining four rounded corners, the bricks being stacked in layers to form the checkerwork and the bricks in each layer being so staggered from the bricks of an adjacent one of the layers that each brick of a respective superposed layer stacked on a respective underlying layer rests on the top surfaces of four bricks of the underlying layer, the four bricks defining therebetween a through passage in alignment with the through passage of the brick of the superposed layer and the rounded corners of the latter through passage projecting inwardly in relation to the former through passage.

4,436,145

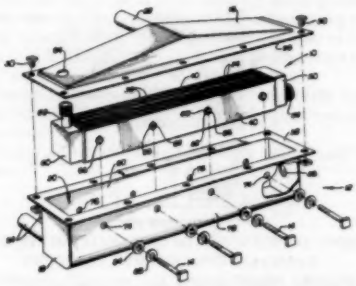
CHARGE AIR COOLER MOUNTING ARRANGEMENT

Joseph N. Manfredo, Palos Verdes Estates, and Selwyn R. Hirsch, Los Angeles, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Nov. 6, 1981, Ser. No. 318,937

Int. Cl.³ F28F 9/00; F28D 9/00

U.S. Cl. 165—67 24 Claims



1. A charge air cooler mounting arrangement for mounting a charge air cooler within an engine intake manifold, comprising:

a plate-fin charge air cooler having a heat exchanger core with a stacked plurality of generally parallel plate-fin heat transfer elements defining a first flow path and a second flow path generally parallel with said first flow path for respective passage of charge air and coolant in heat transfer relation with each other;

at least one relatively rigid mounting sleeve carried by said charge air cooler to extend perpendicularly of said plate-fin elements and having a length at least as great as the width of said charge air cooler;

an engine intake manifold having a chamber formed therein for reception of said charge air cooler with said mounting sleeve extending transversely between a pair of manifold side walls bounding opposite sides of the chamber;

means extending through at least one of said manifold side walls and into said mounting sleeve for securing said mounting sleeve with respect to said one side wall and thereby secure said charge air cooler within said manifold; and

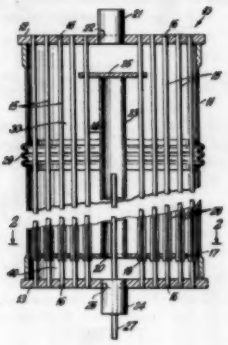
means coupled between said plate-fin elements and said mounting sleeve for preventing leakage between said first and second flow paths in the vicinity of said mounting sleeve.

4,436,146

SHELL AND TUBE HEAT EXCHANGER

James Smolarek, Blasdell, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed May 20, 1981, Ser. No. 265,681
Int. Cl.³ F28D *7/02*
U.S. Cl. 165—111 **13 Claims**



1. An open-ended, shell and tube heat exchanger for use in a vertical position comprising:
(a) a longitudinal shell,
(b) a pair of spaced tube sheets attached near their periphery to the upper and lower ends of the shell so as to define an enclosed space,
(c) baffle means positioned proximate to the lower tube sheet extending across and attached to the longitudinal shell so as to divide the enclosed space into a larger condensation chamber and a smaller vapor-liquid separation chamber, said baffle means comprising a plurality of first openings and a plurality of second openings larger than said first openings,
(d) a plurality of heat transfer tubes extending through the enclosed space having their opposite ends attached to each tube sheet, each tube extending through a first or second opening and adapted to have a first heat exchange medium flow therethrough,
(e) a first conduit for introducing vapor communicating with said condensation chamber,
(f) means for distributing the vapor substantially throughout the condensation chamber, such that vapor and condensing liquid flow downwardly along substantially the entire length of said heat transfer tubes,
(g) a second conduit having an opening communicating with the vapor-liquid separation chamber for removing condensed liquid, and
(h) a third conduit having an opening communicating with the vapor-liquid separation chamber, for removing vapor, at a point above the opening of the second conduit.

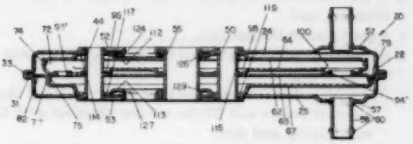
4,436,147

DUAL FLUID HEAT EXCHANGER

Sharon J. Hudson, Jr., Lambertville, Mich., assignor to Sharon Manufacturing Company, Lambertville, Mich.

Filed Nov. 30, 1978, Ser. No. 965,149
Int. Cl.³ F28D *9/00*; **F28F** *3/12*
U.S. Cl. 165—165 **10 Claims**

1. A heat exchanger made of sheet metal components comprising: an outer shell made of two shell members bonded together, a partition member in said outer shell defining two compartments for a circulating cooling fluid, an aperture in said partition member providing communication between said compartments, a fluid inlet to one of said compartments, a fluid outlet from the other of said compartments, two pairs of plate members defining two chambers of an inner assembly for a circulating fluid to be cooled, one of said plate members of one



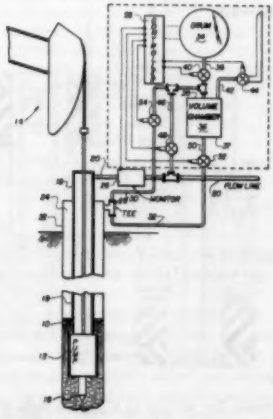
of said pairs being formed by said partition member said plate members being disposed such that one plate member is exposed to the circulating coolant in one compartment and the other plate members are exposed to the circulating coolant in the other compartment, a fluid inlet to one of said chambers, a fluid outlet from the other of said chambers and aperture means providing communication between said chambers.

4,436,148

CHEMICAL TREATMENT FOR OIL WELLS

Richard Maxwell, 2021 E. 56th, Odessa, Tex. 79762

Filed Apr. 27, 1981, Ser. No. 257,780
Int. Cl.³ E21B *37/06, 37/08, 43/12, 44/00*
U.S. Cl. 166—53 **3 Claims**



1. In a liquid system having:
a. a liquid reservoir,
b. a pump with a pump intake in the reservoir,
c. a flow line from the pump having pressurized liquid from the reservoir,
d. a treatment drum, and
e. treatment liquid in the drum; wherein the improved structure for adding treatment liquid to the reservoir comprises:
f. a closed volume chamber having a top and bottom,
g. a flush line extending from the bottom of the volume chamber to the reservoir,
h. a flush valve in the flush line,
j. a treatment feed line connecting the treatment drum to the volume chamber,
k. a feed valve in the feed line,
l. a vent line extending from the top of volume chamber to atmosphere,
m. a vent valve in the vent line,

n. a liquid pressure line from the flow line to the volume chamber, and

o. a pressure valve in the pressure line,

p. a source of gas at a gas pressure which is greater than the pressure of the reservoir liquid at the level of the bottom of the volume chamber,

q. a gas line connecting the source of gas to the volume chamber, and

r. a gas valve in the gas line,

s. a controller providing means for opening and closing said valves so that

(i) opening the feed valve and the vent valve and closing all other valves will fill the volume chamber with treatment liquid, and then

(ii) opening the flush valve and pressure valve and closing all other valves will flush the treatment liquid from the volume chamber into the reservoir, and

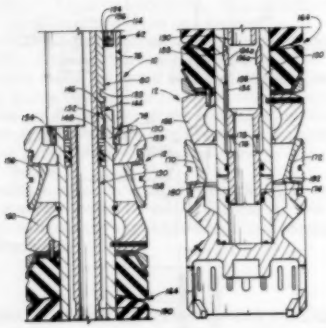
(iii) after flushing the treatment liquid into the reservoir, then opening the gas valve and flush valve and closing all other valves will purge the volume chamber of liquid.

4,436,149

HYDRAULIC SETTING TOOL

Arnold G. Edwards, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jun. 18, 1982, Ser. No. 389,700
Int. Cl.³ E21B *33/06*
U.S. Cl. 166—120 **17 Claims**



1. Apparatus for setting in a bore a well tool of the type having radially expandable anchor means and a mandrel-actuated slidable valve for permitting flow through the tool, said apparatus comprising:

inner and outer sleeves telescopically interengaged and adapted to be suspended from a tubing string for lowering into the bore;

means for attaching a shearable connector to the lower end of said inner sleeve for suspending such a tool therefrom;

a vertically shiftable mandrel received within the inner sleeve for engaging the well tool valve;

means for maintaining said mandrel in a predetermined upper position with respect to said inner sleeve;

means for telescopically moving said inner sleeve upwardly relative to said outer sleeve, said outer sleeve engaging said anchor means to effect setting of the tool responsive to such movement; and

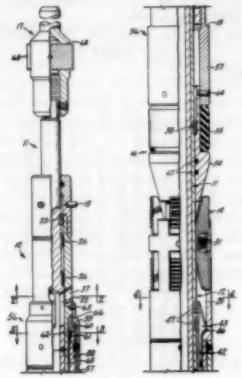
means for maintaining said mandrel in a predetermined lower position with respect to said inner sleeve subsequent to such setting of the tool.

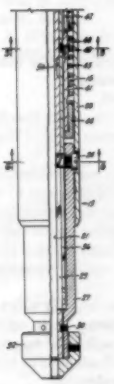
4,436,150

BRIDGE PLUG

James M. Barker, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Sep. 28, 1981, Ser. No. 306,150
Int. Cl.³ E21B *33/129*
U.S. Cl. 166—31 **29 Claims**





1. A bridge plug for a well bore comprising

an elongated linear mandrel having an internal bypass passage opening to the lower end of said mandrel, with the upper end of said passage terminating in lateral ports opening to the exterior of said mandrel;

an elongated tubular outer mandrel mounted for limited axial movement on said inner mandrel;

external slips carried on said outer mandrel for limited axial movement relative thereto, and disposed to be expanded into setting engagement with a well bore;

a tubular setting assembly mounted for axial movement on said outer mandrel above said slips; said setting assembly including a lower top wedge to engage and expand said slips, an upper compression member, and an annular elastic seal element disposed to be compressed between said top wedge and said compression member and thereby expanded radially into sealing engagement with the well bore;

said outer mandrel and said compression member having means for coupling to a setting apparatus, for concurrent upward pull of said outer mandrel and downward push of said setting assembly to effect the setting of said bridge plug in a well bore;

coupling means for coupling said inner mandrel to said tubular setting assembly for downward movement therewith relative to said outer mandrel during the setting of said bridge plug;

said outer mandrel having lateral ports for selective communication with said inner mandrel ports to open and close said bypass passage;

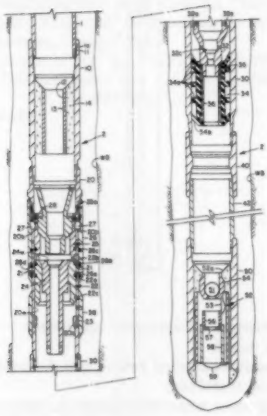
yieldable coupling means coupling axially said inner and outer mandrels during the running of said plug into the well bore, to maintain said ports in communication to open said bypass passage; said yieldable coupling means yielding and said outer mandrel being moved upward relative to said inner mandrel, during the setting of said bridge plug, to move said ports out of communication to close said bypass passage.

4,436,151

APPARATUS FOR WELL CEMENTING THROUGH A TUBULAR MEMBER

Rudy B. Callihan, and Lyndon R. Stone, both of San Antonio, Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Filed Jun. 7, 1982, Ser. No. 385,613
Int. Cl.³ E21B *33/16, 33/06*
U.S. Cl. 166—154 **5 Claims**



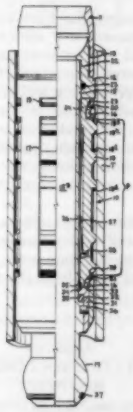
1. A well conduit cementing apparatus for effecting plural stage cementing of a subterranean well conduit by cement supplied through a small diameter tubular member, comprising, in combination a tubular assembly attachable at its upper end to the well conduit; means in the upper end of the bore of said tubular assembly for sealingly engaging the bottom portion of the small diameter tubular member; means in the lower portions of the bore of said tubular assembly defining an axial cement conduit communicating with the well, whereby a first stage of cement may be supplied through the tubular member to exteriorly surround the lower portions of said tubular assembly; a plurality of peripherally spaced cement ports in said tubular assembly located above the first stage cement level; a first annular valve mounted relative to said tubular assembly in sealing relation to said cement ports; a first plug means movable through the tubular member to seal the bore of said first annular valve, whereby pressured fluid applied through the tubular member will urge said first annular valve to expose said radial cement ports, thereby permitting a second stage of cement to be supplied through the tubular member and said cement ports to the exterior of said tubular assembly; a second annular valve mounted relative to said tubular assembly above said first annular valve; an annular piston assembly mounted in said tubular assembly and operatively connected to said second annular valve; and a second plug means droppable through the tubular member to seal the bore of said annular piston assembly above said radial cement ports, thereby permitting pressured fluid supplied through the tubular member to urge said annular piston assembly and said second annular valve downwardly to close said cement ports.

4,436,152

SHIFTING TOOL

Ernest P. Fisher, Jr., and William R. Welch, both of Carrollton, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Sep. 24, 1982, Ser. No. 422,739
Int. Cl.³ E21B *23/00*
U.S. Cl. 166—214 **5 Claims**



1. An improved shifting tool connectable in a well tool string for operating a sliding sleeve device, comprising:

a. an inner tubular mandrel;

b. an outer key mandrel secured in concentric spaced relation around said tubular mandrel, said key mandrel having a plurality of windows and an equal number of slots, said slots being spaced vertically above and aligned with each window, each slot and each window having a camming surface along the lower surface thereof;

c. a selectively profiled key disposed for radial movement in each of said windows, each said key having an upper extended portion and a lower extended portion, each upper extended key portion having a camming surface engageable with said slot camming surface and each lower key extended portion having a camming surface engageable with said window camming surface;

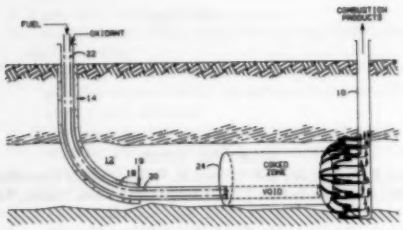
d. means between said keys and said inner mandrel biasing said keys outwardly; and

e. releasable holding means between said inner mandrel and said lower key extended portion retaining said keys in a radially movable position and said camming surfaces disengaged, said holding means being releasable when an upward force in excess of a predetermined value is applied to said mandrels when said shifting tool is engaged with a sliding sleeve device whereby said camming surfaces are engaged at both ends of each key camming said keys inwardly to disengage from said sliding sleeve device.

4,436,153
IN-SITU COMBUSTION METHOD FOR CONTROLLED THERMAL LINKING OF WELLS

Francis M. Carlson, Tulsa, Okla., assignor to Standard Oil Company, Chicago, Ill.

Filed Dec. 31, 1981, Ser. No. 336,200
Int. Cl.³ E21B 43/243
U.S. Cl. 166—260 5 Claims



1. A method of underground conversion of hydrocarbon-bearing material disposed in a subterranean formation, the method being carried out between an injection well and a production well wherein a portion of the injection well is deviated toward the production well, comprising:

initiating a combustion zone in the hydrocarbon-bearing material adjacent the production well;

injecting an oxygen-containing gas and a combustible material through separate conveyance components of the injection well for mixing adjacent the end of the injection well;

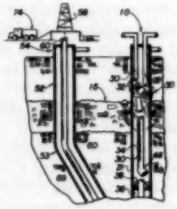
advancing the combustion zone through the formation from the production well to the injection well along the deviated portion of the injection well; and

removing produced gases from the formation through the production well.

4,436,154
METHOD FOR CONTROLLING SUBSURFACE BLOWOUT

Roy R. Vann, Houston, and Flint R. George, Katy, both of Tex., assignors to Geo Vann, Inc., Houston, Tex.

Filed Feb. 23, 1981, Ser. No. 236,867
Int. Cl.³ E21B 43/12
U.S. Cl. 166—281 10 Claims



1. In a formation having a cased wellbore extending thereto, wherein the wellbore is damaged and the formation is inaccessible therethrough, the method of reworking the formation comprising the steps of:

(1) forming a borehole which is arranged in spaced relationship to the wellbore; and, drilling the lower end of the borehole non-intersecting but within shooting range of the wellbore;

(2) orienting a plurality of shaped charges of a perforating gun to fire in the same direction;

(3) running the gun of step (2) downhole into the borehole at a location adjacent to the perforated casing of the wellbore; orienting the gun respective to the wellbore to position the shaped charges to fire radially away from the gun and form tunnels towards the perforated casing of the wellbore;

(4) firing the gun;

(5) pumping killing fluid down through the borehole, through the tunnels, and into the lower end of the wellbore, thereby isolating the formation from the upper wellbore; the killing fluid being pumped down the cased borehole simultaneously with the firing of the gun, with the killing fluid being maintained at a pressure which forces a flow path to be formed from the borehole into the perforated zone of the wellbore.

4,436,155
WELL CLEANUP AND COMPLETION APPARATUS

Emmet F. Brieger, Alburquerque, N. Mex., assignor to GEO Vann, Inc., Houston, Tex.

Filed Jun. 1, 1982, Ser. No. 383,746
Int. Cl.³ E21B 43/11
U.S. Cl. 166—297 19 Claims

12. Well completion apparatus comprising:

detonator means;

tubular means connected around said detonator means, and extending therefrom;

first check valve means included in the tubular means adjacent said detonator means to allow flow from inside said tubular means to the exterior thereof;

second check valve means included in said tubular means farther from said detonator means than said first check valve means and allowing flow from outside to inside said tubular means.

4,436,156
METHOD OF TREATING WELL FORMATIONS EMPLOYING FOAMED TREATMENT FLUIDS

Sherman E. Fredrickson, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jun. 21, 1982, Ser. No. 390,156
Int. Cl.³ E21B 43/267, 43/27
U.S. Cl. 166—307 20 Claims

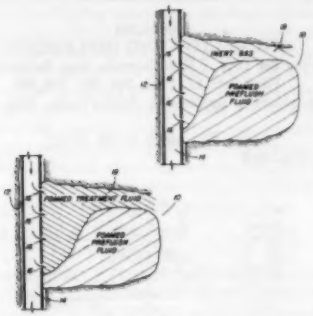
1. A method for placing a foamed treating fluid into an upper portion of a fracture in an underground well formation comprising:

introducing a foamed preflush fluid having a known specific gravity into said fracture;

introducing an inert gas into said fracture containing said foamed preflush fluid in an amount sufficient to create a flow channel above said foamed preflush fluid in said fracture; and,

introducing a foamed treating fluid into said fracture

whereby said foamed treating fluid is caused to override said foamed preflush fluid and flow through said flow



channel formed by said inert gas into an upper portion of said fracture.

4,436,157

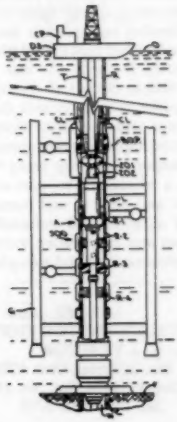
LATCH MECHANISM FOR SUBSEA TEST TREE

Robert T. Brooks, Kingwood, Tex., assignor to Baker International Corporation, Orange, Calif.

Continuation-in-part of Ser. No. 64,332, Aug. 6, 1979, Pat. No. 4,320,804. This application Aug. 7, 1981, Ser. No. 291,009

Int. Cl.³ E21B *43/12, 34/10*

U.S. Cl. 166—344 **10 Claims**



1. In a test assembly with a blowout preventer stack above a subterranean well and carryable between upper and lower portions of a tubular conduit extendible to at least one production zone within said well, said test assembly having valve means in the lower conduit portion manipulatable between open and closed positions by a reciprocable actuator sleeve to control the flow of fluid within said conduit, the improvement comprising: means defining an annular pressure chamber disposed around said actuator sleeve; an annular piston mounted in said annular fluid pressure chamber for shifting the actuator sleeve between its valve open and valve closed positions; latching means connecting said annular piston to said valve actuator; a latch retaining sleeve axially shiftably mounted in the upper tubular conduit portion between a latch retaining position securing said annular piston to said actuator sleeve, and a latch releasing position relative to said latching means releasing said annular piston from said actuator sleeve; means for maintaining said latch retaining sleeve in said latch retaining position whenever said valve means is positioned in other than its closed position; a second annular piston in said annular pressure chamber operatively connected to said latch sleeve, and a spring interposed between said annular piston and said second annular piston.

4,436,158

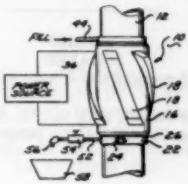
RELEASABLE DRILL STRING DEVICE AND METHOD

Kenneth J. Carstensen, 4540 N. 44th St., No. 70, Phoenix, Ariz. 85018

Filed Dec. 15, 1981, Ser. No. 330,958

Int. Cl.³ E21B *17/10*

U.S. Cl. 166—377 **38 Claims**



29. The method of releasably attaching a drill tool to a drill collar or other tubular member of a drill string comprising the steps of:

defining a cavity between the outer surface of the tubular member and the inner surface of an encompassing drill tool;

preheating the drill tool;

pouring a low melting point fill material into the cavity to substantially fill the cavity;

solidifying the fill material in place to mechanically unite the drill tool and tubular member by transferring heat primarily to the tubular member, such that the drill tool heat shrinks onto the fill material and preloads it under compression onto the tubular member; and

remelting the fill material to remove the drill tool.

4,436,159

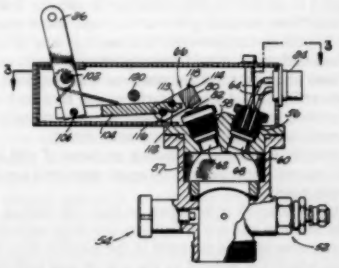
MANUAL/ELECTRIC ACTIVATED SQUIB ACTUATED DISCHARGE VALVE FOR FIRE EXTINGUISHERS

Blaise Revay, San Marino, Calif., assignor to Kidde, Inc., Clifton, N.J.

Filed May 1, 1981, Ser. No. 260,132

Int. Cl.³ A62C *35/02*

U.S. Cl. 169—28 **4 Claims**



1. An improved dual squib discharge valve for a container housing pressurized fire extinguishing fluid and having a frangible diaphragm for releasing said fluid upon rupture thereof and further including first and second squibs, said first squib being actuated by an electric current source, means for con-

necting said electrical current source to said first squib upon command, impact means, means for mechanically actuating said impact means to fire said second squib upon command, wherein the improvement comprises:

plate means having first and second screw threaded apertures therein adapted to receive said first and second squibs respectively; and

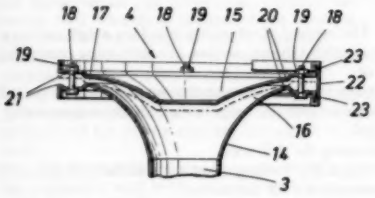
said plate means includes a generally V-shaped protrusion extending between and beyond the active ends of said first and second squibs to block the line of sight therebetween when said squibs are fully seated in their respective threaded apertures wherein said protrusion isolates shock waves generated by firing of one of said squibs from the other of said squibs to substantially prevent unwanted detonation of or damage to the unfired squib.

4,436,160

SPRAYER

Franz Ragaller, Schmiedstrasse 6, A-4070 Eferding Österreich, Austria

Filed Jan. 21, 1982, Ser. No. 341,293
Int. Cl.³ A62C *31/02*; B05B *1/32*
U.S. Cl. 169—74 **16 Claims**



1. In a sprayer comprising

a tank adapted to hold a sprayable substance,

a sprayhead disposed above said tank,

a rising pipe having an inlet opening in the lower portion of the interior of said tank and leading to said sprayhead,

a pressure vessel adapted to hold a compressed gas, and

a shutoff valve operable to establish a communication between the interior of said pressure vessel and the interior of said tank,

the improvement residing in that

said sprayhead comprises a base and a top,

said base is coaxial to and communicates with said rising pipe and flares upwardly and has an upwardly facing, annular seating face,

said top is exposed on its underside to the interior of said base and is vertically movable relative to said base and biased to a lower position and has an annular seating face which faces the seating face of said base and is arranged to be in sealing contact with said seating face of said base when said top is in said lower position,

said base and said top have portions which extend radially outwardly of said seating surfaces and face each other,

said radially outwardly extending portions of said top are formed with angularly spaced apart holes,

said radially outwardly extending portions of said base and said top are vertically spaced apart when said top is in said lower position,

said top is adapted to be raised so that said seating faces of said base and said top define between them an annular gap in response to fluid pressure in the interior of said base,

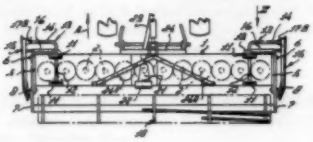
screws which are parallel to the axis of said sprayhead are secured to said radially outwardly extending portions of said base and extend upwardly from said base through said holes and above said top, and

said base carries vertically adjustable stop means, which are spaced above said top when the same is in said lower position and adapted to be engaged by said top to the limit the upward movement thereof, said stop means consisting of nuts screwed on said screws above said top.

4,436,161

SOIL CULTIVATING IMPLEMENTS

Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

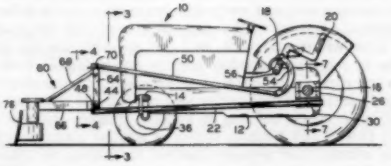
Filed Feb. 12, 1982, Ser. No. 348,356
Claims priority, application Netherlands, Feb. 18, 1981, 8100784
Int. Cl.³ A01B *33/06, 33/12*
U.S. Cl. 172—49.5 **11 Claims**

1. A soil cultivating implement comprising a frame and a row of soil working members mounted along the length of an elongated portion of said frame, a roller interconnected to said frame to support said frame portion and said roller being located to the rear of that portion, at least one side plate displaceably mounted on said frame adjacent a lateral side of said row to deflect soil being worked inwardly towards said roller, said plate having a lower substantially horizontal portion that extends in the general direction of implement travel during operation, said plate being pivoted to the top of said frame portion by an arm, a horizontal portion of said arm extending forwardly from bracket means on said frame portion to a laterally and outwardly extending arm portion that is connected by fastening means to a forward part of said plate, the trailing end of said plate extending freely to the rear and said fastening means being adjustable to move said trailing end nearer to or farther from said roller, a stop on said frame portion being positioned to prevent said side plate from pivoting too far downwardly when the implement is in operation or is undergoing inoperative transport, said stop being located in front of said frame portion, a telescoping support arm interconnecting the forward part of said plate to said frame and said support arm being located adjacent said outwardly extending arm position, said support arm cooperating with said stop to arrest the downward displacement of said side plate.

4,436,162

IMPLEMENT ATTACHMENT FOR THE FRONT END OF A TRACTOR

Michael J. Seibert, Rte. 5, Bryan, Ohio 43506

Filed Oct. 15, 1981, Ser. No. 311,560
Int. Cl.³ A01B *3/76*
U.S. Cl. 172—810 **4 Claims**



1. An implement-attaching apparatus for the front end of a tractor comprising a frame device which carries two horizontally spaced supports adapted to receive two coaxial pivot pins, an actuating linkage carrying an elongated cross-bar disposed above and generally in parallelism with said spaced supports, a pivot connection provided on said cross-bar intermediate its

ends and generally midway between and above said spaced supports, and means for supporting said frame device for limited vertical, free floating movement, said frame device including two elongated members which are spaced apart and generally parallel, said actuating linkage includes two elongated bars which are also spaced apart and generally parallel to each other and to said elongated members, said two members carrying said two supports, respectively, and said two bars being connected to the opposite end portions, respectively, of said cross-bar, said means including two eyelet elements which are horizontally spaced and which receive said elongated members therethrough, said eyelet elements being of a size as permits vertical movement of said members therein.

4,436,163

ARRANGEMENT FOR CONVERTING ROTARY MOTION TO RECIPROCATORY MOTION

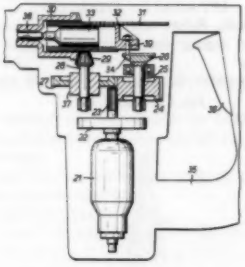
Frank F. Simpson, Staines, England, assignor to Black & Decker Inc., Newark, Del.

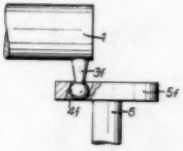
Continuation-in-part of Ser. No. 102,688, Dec. 12, 1979. This application May 22, 1981, Ser. No. 266,156

Claims priority, application United Kingdom, Dec. 13, 1978, 48305/78

Int. Cl.³ B23B *45/02, 45/16*

U.S. Cl. 173—117 **4 Claims**





1. A power operated tool, comprising:

a prime mover;

an output member for reciprocating an operating tool member when present;

a power transmission mechanism arranged to transmit motion of the prime mover to said output member and comprising:

(a) a first member mounted for reciprocatory and partial rotary motion,

(b) a second member mounted for rotary motion about an axis transverse to the axis of reciprocatory motion of said first member, and having a bore therein eccentric of and inclined to said axis of rotary motion, and

(c) a link coupled at one end to said first member, and at the other end to said second member, said other end being mounted in said bore for swivelling and sliding movement relative thereto,

whereby rotation of said second member by the prime mover reciprocates said first member and also imparts a cyclic partial rotation to the first member during reciprocation thereof;

said bore being inclined towards said axis of rotary motion in the general direction of said link from said other end to said one end; and

the axis of said bore intersecting said axis of rotary motion and making an angle therewith equal to about one quarter of the angle through which said first member partially rotates.

4,436,164

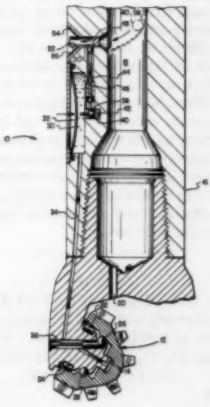
LUBRICATION FAILURE DETECTION SYSTEM

Lloyd L. Garner, Ft. Worth, Tex., assignor to Globe Oil Tools, Inc., Fort Worth, Tex.

Filed Mar. 10, 1982, Ser. No. 356,853

Int. Cl.³ E21B *10/22*

U.S. Cl. 175—39 **19 Claims**



1. A lubrication failure detection system for use in conjunction with an earth boring drilling system having at least one rotary drill bit coupled to a drill string, said drill string including an internal passage adapted to receive drilling fluid under pressure at a first end thereof and including at least a first orifice at a second end thereof for directing said drilling fluid into the bottom of the annulus formed by said drilling system, said lubrication failure detection system comprising:

at least one lubricant chamber for storing a reservoir of lubricant;

a passageway coupling said lubricant chamber to a bearing surface within said at least one rotary drill bit;

a flexible membrane interposed between said lubricant chamber and said annulus, said flexible membrane adapted to distend inwardly in response to the pressure of said drilling fluid within said annulus, thereby forcing lubricant into said passageway;

a second orifice between said internal passage and said annulus;

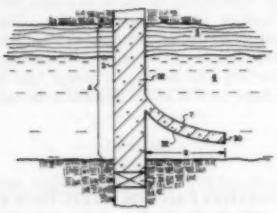
a plug within said second orifice and a mechanical linkage means responsive to a selected distention of said flexible membrane for releasing said plug; and

second means for detecting a reduction in pressure of said drilling fluid within said internal passage when said second orifice is opened.

4,436,165
DRAIN HOLE DRILLING

Leonard W. Emery, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 2, 1982, Ser. No. 414,212
Int. Cl.³ E21B *71/00*
U.S. Cl. 175—61 6 Claims

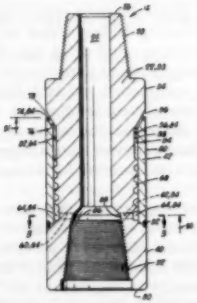


1. In a method for drilling at least one laterally extending drain hole wellbore from a primary wellbore into an area of the earth that produces both gas and liquid, the improvement comprising drilling a first portion of said drain hole wellbore into said area, said first portion being at least through the radius of curvature portion of said drain hole wellbore, filling said primary wellbore in said area and at least said radius of curvature portion of said drain hole wellbore with a hardenable material, allowing said material to harden, and re-drilling said primary wellbore and said filled portion of said drain hole wellbore to leave an outer layer of said hardened material around said primary and drain hole wellbores whereby in said area of gas and liquid production a lined primary wellbore and a lined first portion of said drain hole wellbore adjacent said primary wellbore is established to thereby reduce gas coning into same and enhance liquid production through the unlined portion of said drain hole wellbore.

4,436,166
DOWNHOLE VORTEX GENERATOR AND METHOD

Asadollah Hayatdavoudi, and Ladd M. Adams, both of Norman, Okla., assignors to Gill Industries, Inc., Meeker, Colo.

Filed Jul. 17, 1980, Ser. No. 169,676
Int. Cl.³ E21B *21/00*
U.S. Cl. 175—65 47 Claims



1. A method of drilling a well, comprising:

rotating a drill bit attached to a lower end of a drill string by rotating an upper end of said drill string, and thereby boring a well borehole;

dividing a downward flow of drilling fluid in said drill string, at a first elevation above said drill bit, into a first stream and a second stream;

directing said second stream of fluid downward, through a portion of said drill string below said first elevation, to said drill bit, then out at least one orifice of said drill bit, and then upward through an annulus between said drill string and said well borehole;

directing said first stream of fluid into said annulus, at a second elevation above said drill bit, with a velocity component tangential to said annulus; and thereby

imparting a swirling motion in only one direction about said drill string to said upward flowing second stream of drilling fluid; and

wherein said step of directing said first stream of fluid into said annulus includes steps of:

directing said first stream of fluid into a lower portion of an annular space disposed in a cylindrical housing with a velocity component tangential to said annular space at a point where said first stream of fluid enters said annular space, to thereby create a swirling motion of said first stream of fluid within said annular space within said housing;

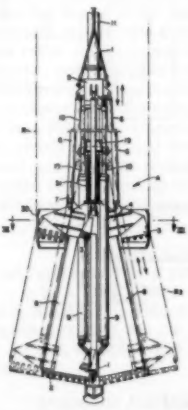
flowing said swirling first stream of fluid upward through said annular space within said housing; and

ejecting said upwardly swirling first stream of fluid from an upper portion of said annular space into said annulus.

4,436,167
METHOD OF EXCAVATING A PILE HOLE AND AN APPARATUS THEREFOR

Masakazu Masuda, Sakai, and Hironori Matsumoto, Amagasaki, both of Japan, assignors to Okumura Corporation, Osaka, Japan

Filed Mar. 30, 1981, Ser. No. 249,236
Int. Cl.³ E21B *10/32*
U.S. Cl. 175—72 14 Claims

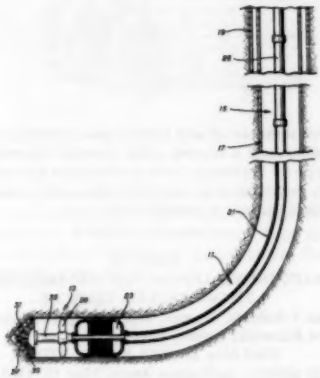


1. In a pile hole excavating method of excavating a pile hole of the required diameter by means of excavating bits fixed to the lower end portion of a rotary drill pipe and stabilizing the hole wall by filling the excavated pile hole with slurry, the improvement comprising firstly excavating a pile hole portion of a larger diameter down to the required depth by moving widening bits on the drilling apparatus to an extended position, drawing the widening bits in to a retracted position and excavating a pile hole portion of reduced diameter down to the required depth, moving the widening bits to the extended position and excavating a pile hole bottom of widened diameter for forming a pile hole with a larger diameter at the pile head and at the pile bottom, and finally sucking up and discharging the soil, sand, slime and slurry excavated by both bits and settled on the hole bottom by a suction pipe fixed to the rotary drill pipe.

4,436,168
THRUST GENERATOR FOR BORING TOOLS

Newton B. Dismukes, 2952 Buttonwood Dr., Carrollton, Tex. 75006

Filed Jan. 12, 1982, Ser. No. 339,001
Int. Cl.³ E21B 4/04
U.S. Cl. 175—94 15 Claims



1. A rotary drilling system for drilling a well bore in the earth comprising in combination:

a. an electric motor comprising a housing and at least one rotor;

b. a twist resistant flexible conduit for conducting drilling fluid and electric power to one end of said housing of said electric motor;

c. at least one rotor driven hollow shaft projecting from the other end of said housing;

d. hollow shaft driven bit means;

e. marine screw propeller means mounted on said rotor driven shaft rotation of which generates forward thrust along the axis of said shaft;

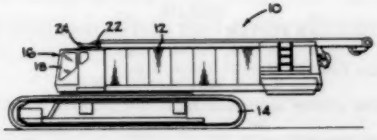
f. means for transmitting the forward thrust generated by said propeller to said bit means, said housing and said conduit; and

g. coupling means connecting the end of said conduit and said motor housing, said coupling means transmitting torque from the motor housing to the conduit to resist the tendency of the motor housing to rotate in a direction counter to the rotation of said hollow shaft as torque is imposed to the housing through the action of the drill bit and the propeller.

4,436,169
ELEVATING AND TILTING MECHANISM FOR CRANE CAB

Dennis A. Jennerjohn, and Lyle B. Jensen, both of Cedar Rapids, Iowa, assignors to FMC Corporation, Chicago, Ill.

Filed Jan. 25, 1982, Ser. No. 342,287
Int. Cl.³ B62D 23/00
U.S. Cl. 180—89.14 6 Claims



1. In combination with a crane having a lower works rotatably supporting an upper works including an upright wall, an elevatable cab movable between lowered and raised positions comprising:

a subframe connected to said upper works;

an inner link pivotally connected at its upper end to said subframe and at its lower end to said cab and positioned parallel to and adjacent said wall when said cab is in its lowered position;

a pair of outer links oriented parallel to said inner link and pivotally connected to said subframe and said cab at their upper and lower ends respectively;

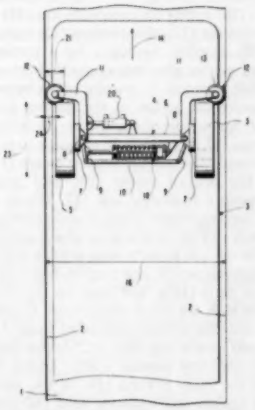
upper and lower cross tubes connected between said outer links; and

hydraulic rams positioned between said inner link and outer links and pivotally connected between said subframe and one of said cross tubes, whereby extension of said rams will cause said cab to be raised and contraction of said rams will cause said cab to be lowered to a position adjacent said upper works.

4,436,170
EXTERNALLY TRACK-GUIDED VEHICLE, ESPECIALLY FOR THE LOCAL PUBLIC PASSENGER TRAFFIC

Herbert Mehren, Ludwigsburg, and Ferdinand Panik, Fellbach, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 13, 1978, Ser. No. 951,044
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1977, 2746462
Int. Cl.³ B62D 1/26
U.S. Cl. 180—131 21 Claims



1. A vehicle comprising a vehicle axle means including steerable vehicle wheels mounted thereon, cross-guide roller means being adapted to cooperate with an external guide track for mechanically guiding and automatically influencing a deflection angle of the steerable wheels, and support arm means for mounting said cross-guide roller means on at least one side of the vehicle, said cross-guide roller means being located at a forward end of the support arm means in front of the steerable vehicle wheel, as viewed in a normal driving direction of the vehicle, the support arm means is attached to the hub of each of the steerable vehicle wheels, the cross-guide roller means includes a single cross-guide roller, a single cross-guide roller is arranged on each of the support arm means so that a cross-guide roller means is provided on both sides of the vehicle forwardly of the steerable vehicle wheel, characterized in that the support arm means are constructed relatively bending-rigid under a substantial elimination of yieldingness, and in that the

cross-guide roller is constructed as a metal wheel provided along an outer circumference thereof with a solid rubber tread,

force storage means are interposed between the support arm means for prestressing the support arm means in a direction toward a position substantially corresponding to a straight driving position of the vehicle,

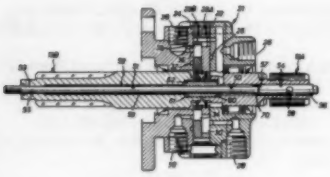
a distance between outer surfaces of the cross-guide rollers is greater than a distance between cross-guide means of the external guide track so that the cross-guide rollers are adapted to be pressed against the cross-guide means under a prestress of about 400 to about 1,000 N.

4,436,171

POWER ASSISTED STEERING DEVICE FOR A VEHICLE

Patrice Bertin, Paris, France, assignor to VALEO, Paris, France

Filed Feb. 23, 1982, Ser. No. 351,485
Claims priority, application France, Feb. 23, 1981, 81 03512
Int. Cl.³ B62D *5/06*
U.S. Cl. 180—148 **6 Claims**



1. Power-assisted steering device for a vehicle, comprising control means (10) acting on turning means (11) via a rotating transmission element (13), this element (13) being in two parts (13A and 13B) coupled elastically by a torsion bar (52), a limited relative angular play being provided between these two parts (13A, 13B) to permit an angular offset between said parts (13A, 13B) under the action of the control means (10) and against a restoring action of the torsion bar (52), and power-assistance means (17, 18) which, in response to such an angular offset, are allowed to act on the turning means (11) in the same direction as the control means (10), said power-assistance means comprising a hydraulic unit (17, 18), an actuator (19) acting on the turning means (11) and a distributor (12) located between the unit and the actuator, in which device said torsion bar (52) has, on the one hand, a main portion (53) which passes through the distributor (21) and extends freely in a perforation (50, 51) of said parts (13A, 13B) and, on the other hand, two ends (54, 55) which are fixed respectively to said parts (13A, 13B), at least one (54) of these ends being formed by a widened head (56) of said torsion bar (52), said device being characterized in that at least one annular sealing gasket (70, 70') is arranged round the main portion (53) of the torsion bar (52), being applied against said widened head (56) and engaged in said perforation (50), the torsion bar (52) having, between the main portion (53) and the widened head (56), a fillet (57) against which said annular sealing gasket (70, 70') wedges itself.

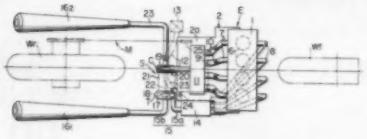
4,436,172

MOTORCYCLE HAVING AN ENGINE WITH A TURBO-SUPERCHARGER

Kazuo Inoue, Tokyo, and Tsuneo Otsuka, Wako, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 25, 1982, Ser. No. 342,368
Claims priority, application Japan, Jan. 24, 1981, 56-9174
Int. Cl.³ B62D *63/04*; F02D *23/00*
U.S. Cl. 180—219 **6 Claims**

1. A motorcycle having an engine with a turbo-supercharger mounted on a body frame between front and rear wheels, comprising: a first muffler and a second muffler arranged on opposite sides of said rear wheel, an exhaust pipe having a front end connected to said engine and a rear end connected to said first muffler, said turbo-charger having a turbine disposed in said exhaust pipe and a compressor coupled for rotation with said turbine, a waste pipe branching from said exhaust pipe at



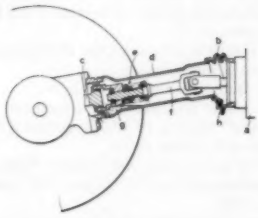
a position upstream of said turbine and connected to said second muffler, and a control valve provided internally of said waste pipe for regulating the flow of exhaust gas passing therethrough and adapted to open when the outlet pressure of said compressor exceeds a predetermined level.

4,436,173

SHAFT DRIVE APPARATUS FOR MOTORIZED TWO-WHEELED VEHICLE

Hirotake Takahashi, Sayama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1982, Ser. No. 377,908
Claims priority, application Japan, May 15, 1981, 56-72155; May 15, 1981, 56-72156; May 16, 1981, 56-71161[U]; May 19, 1981, 56-72206[U]; May 19, 1981, 56-72207[U]
Int. Cl.³ B62M *17/00, 25/28*
U.S. Cl. 180—226 **19 Claims**



1. In a shaft drive apparatus in a two-wheeled vehicle which includes a vehicle body having a middle portion; front wheel mounted on the body; a rear fork mounted on the body; an internal combustion engine having an output shaft mounted on said middle portion; and a rear wheel mounted on said rear fork; the shaft driving apparatus including: a bevel gear mechanism having a gear casing and an input shaft connected to said rear wheel; a propeller shaft having opposite ends with one end connected to said output shaft and the other end extending axially into said rear fork; and a torque damper interconnecting said other end to said input shaft; the improvement comprising an outer casing extending over and liquid-tightly enclosing said torque damper, said casing being attached to said propeller shaft to rotate therewith.

4,436,174

VEHICULAR POWER UNIT SUPPORTING DEVICE

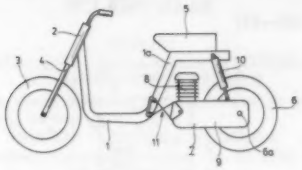
Akira Morisono, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1982, Ser. No. 420,643
Claims priority, application Japan, Sep. 28, 1981, 56-153136
Int. Cl.³ B62K *11/04*
U.S. Cl. 180—227 **10 Claims**

1. In a vehicle having a vehicle body frame, at least one rear wheel, an engine, transmission means for transmitting power of said engine to said rear wheel, a transmission case which

houses said transmission means, a power unit comprising an integral combination of said transmission case and said engine and rotatably supporting said rear wheel and a cushion means for suspending said power unit from said vehicle body frame, a power unit supporting device comprising:

a front member fixed to said vehicle body frame;



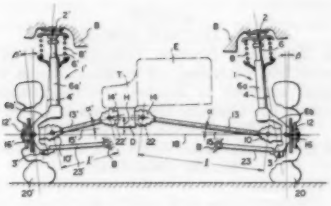
a rear member pivotably connected to said power unit; and at least two spring members which cross each other to define substantially an X-shape in side-elevation, front and rear ends of said spring members being fixed to said front and rear members, respectively.

4,436,175

FRONT WHEEL SUSPENSION FOR A FRONT ENGINE-FRONT WHEEL DRIVE AUTOMOBILE

Kenichi Watanabe, and Takashi Sumimoto, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Aug. 11, 1982, Ser. No. 407,173
Claims priority, application Japan, Aug. 12, 1981, 56-126400
Int. Cl.³ B62D *9/00*; B60G *25/00*
U.S. Cl. 180—254 **5 Claims**



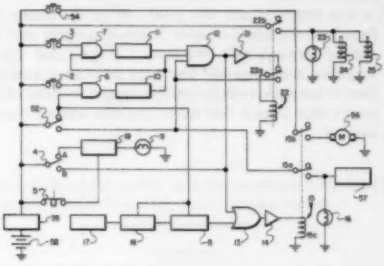
1. A front engine - front wheel drive automobile comprising a power unit including differential gear means provided with left and right output shafts, left and right front wheels mounted for steering movement about left and right king pin axes, respectively, left and right drive shafts having one end connected with said left and right output shafts of the differential gear means, respectively, and the other end with said left and right wheels, respectively, to transmit driving torque to the wheels, said left and right drive shafts being inclined with respect to a horizontal plane by different angles so that a difference between turning moments about said left and right king pin axes is produced when the driving torque is being transmitted to the wheels, the wheel which is connected with the drive shaft with a larger inclination angle with respect to the horizontal plane having a larger camber angle than the other wheel to thereby produce a difference between turning moments about the left and right king pin axes which is in a direction opposite to the difference between turning moments caused by the different angles in inclination of the driving shafts.

4,436,176

DELAYED VEHICLE STARTER

Albert O. Cota, 17475 Flanders St., Granada Hills, Calif. 91344, and Dean C. Obray, 624 23rd St., Manhattan Beach, Calif. 90266

Filed Dec. 14, 1981, Ser. No. 331,300
Int. Cl.³ B60R *25/04*
U.S. Cl. 180—287 **13 Claims**



1. A Delayed Vehicle Starter contained within the structure of a motor vehicle and comprised of a first circuit that prevents the driver of the motor vehicle from starting the vehicle before the driver has sequentially depressed, within a preset time, a plurality of electrical switches and where once started the vehicle must be moved for a minimum distance, within said preset time, to keep the vehicle ignition system enabled, where said first circuit comprises:

(a) a power source,

(b) a motor vehicle ingition switch where the pole of said ignition switch is connected to said power source such that when said ignition switch is placed in the OFF position a voltage, in part, from said power source is applied to one of the inputs of a first two-input AND gate,

(c) a first switch connected to said power source such that when said first switch is closed the second enabling input is applied to said first two-input AND gate,

(d) a first timer that is enabled by the output of said first two-input AND gate where said first timer is active during its preset time and its output provides one of the inputs to a second two-input AND gate and one of the inputs to a three-input AND gate,

(e) a second switch connected to said power source such that when said second switch is closed, subsequent to the closing of said first switch, the second enabling input is applied to said second two-input AND gate,

(f) a second timer that is enabled by the output of said second two-input AND gate where said second timer is active during its preset time and its output provides the second input to said three-input AND gate, where the third enabling input to said three-input AND gate is applied when said vehicle ignition switch is placed in the ON position,

(g) a two-input OR gate that is initially enabled by the output from said three-input AND gate where output of said OR gate is applied through a first amplifier to energize a two-pole double-throw first relay such that when said first relay is energized a voltage from said power source is applied through the closed contact of said vehicle ignition switch and through the closed first contact set of said first relay to the vehicle ignition system,

(h) an Ok-To-Start indicator, electrically connected in parallel with the vehicle ignition system, that is energized by a voltage applied through the closed first contact set of said first relay,

(i) a motor vehicle start switch where one side of said start switch is connected to said power source such that when said start switch is placed in the ON position a voltage from said power source is applied through the closed

second contact set of said first relay to the vehicle start motor,

(j) a rotational transducer assembly that produces a series of pulsed signals when said vehicle is moved,

(k) an electronic counter that receives the signals from said rotational transducer assembly such that when said counter reaches a preset count level, corresponding to an established minimum travel distance, an output signal is produced, and

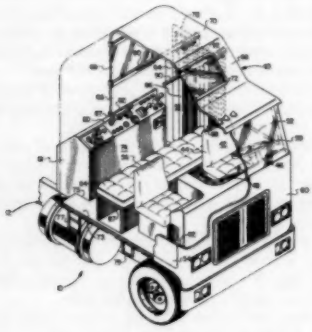
(l) a first bistable latch that when set by the output signal from said electronic counter produces a signal that, when applied through said two-input OR gate and said first amplifier, maintains said first relay in an energized condition to keep the vehicle ignition system enabled after the preset time in said first timer and said second timer has expired.

4,436,177

TRUCK OPERATOR'S CAB WITH EQUIPMENT CONTROL STATION

Thomas L. Elliston, Fort Worth, Tex., assignor to Hydra-Rig, Inc., Fort Worth, Tex.

Filed Mar. 19, 1982, Ser. No. 359,802
Int. Cl.³ B62D *33/06*
U.S. Cl. 180—324 11 Claims



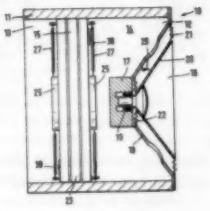
1. In an over the road motor vehicle including a chassis having a main propulsion engine mounted thereon, an operator's cab forming an enclosure defining a driver's compartment for driving said vehicle, said driver's compartment including steering means for said vehicle and an instrument panel for monitoring instruments for said main engine, said cab including a front wall including a windshield formed therein, spaced apart sidewalls, a roof, a rear wall, at least one access door to said driver's compartment, and access doors in each of said sidewalls separate from said one access door to said driver's compartment and opening to a separate control station formed within said enclosure and generally rearward of said driver's compartment, a control panel disposed at sid control station and including means for controlling and monitoring equipment disposed on said vehicle and generally rearward of said cab, a floor forming a part of said enclosure at said control station, and a stepped portion of said roof above said floor providing substantially standing headroom for an operator at said control panel.

4,436,178

HOUSING LOUDSPEAKER

Hans-Joachim Gieger, Fischerbrücke 5, 3300 Braunschweig, DE, Fed. Rep. of Germany

Filed Jan. 25, 1982, Ser. No. 342,163
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1981, 3102870
Int. Cl.³ H05K *5/00*
U.S. Cl. 181—151 25 Claims



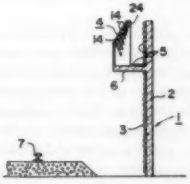
1. A loudspeaker comprising a housing having an interior defined by an inner wall; a loudspeaker element in said interior and having a vibration member, said housing being formed with a loudspeaker opening in one face thereof and an additional opening at an opposite face thereof, said openings defining a box-like intermediate space in said interior; and means for eliminating the sound emitted by the loudspeaker into said interior, said means including a filling with two sound-absorbing faces mounted in said box-like intermediate space between said loudspeaker opening and said additional opening, one of said faces being defined by a flow-tight closure of an elastically vibrationable mass positioned within said interior and having a predetermined size, and the other of said faces being defined by at least one air-flow opening in said closure, said air-flow opening being filled with a packing and having a size much smaller than the size of the flow-tight closure.

4,436,179

NOISE CONTROL APPARATUS

Tsuyoshi Yamamoto; Norihisa Taniguchi, both of Tokyo; Kazuyoshi Iida, Yokohama, and Yoshikazu Kondo, Tokyo, all of Japan, assignors to Japanese National Railways and Bridgestone Tire Company Limited, both of Tokyo, Japan

Filed Dec. 30, 1981, Ser. No. 335,617
Claims priority, application Japan, Jan. 9, 1981, 56-1156
Int. Cl.³ G10K *11/00*
U.S. Cl. 181—210 7 Claims



1. A noise control apparatus for reducing sound volume of noise propagating from a noise source, comprising:

a sound arresting wall separate from the noise source; and

means for shifting in phase and refracting the acoustic wave of the noise to provide a refracted propagating acoustic wave, said means being disposed at substantially the top of said sound arresting wall, said means being hollow and further comprising bent plates vertically disposed within said means, said bent plates having an equal interval there-

between and having front edges aligned in such a manner that a line drawn through the front edges diagonally descends and intersects with said noise source,

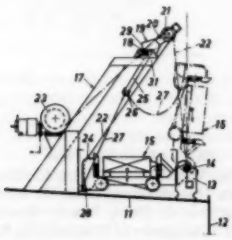
whereby said refracted propagating acoustic wave interferes with said acoustic wave directly propagating from the noise source and diffracting over said sound arresting wall.

4,436,180

METHOD AND A DEVICE FOR PIVOTING AN ACCOMMODATION LADDER

Per Nilsson, Västra Frölunda, Sweden, assignor to AB Welin, Gothenburg, Sweden

Filed Apr. 12, 1982, Ser. No. 367,802
Claims priority, application Sweden, Apr. 13, 1981, 8102342
Int. Cl.³ B63B *23/04*
U.S. Cl. 182—97 **3 Claims**



2. A device for pivoting an accommodation ladder between a stowing position on a ship's deck and an active position outside the ship's side comprising at least one fixed davit, a winch, an operating wire one end of which is wound up on the winch and the other end is attached to the ladder, a two-arm link pivotably mounted on the davit about a horizontal shaft arranged between the said two arms, a pulley for the operating wire mounted on one of said arms of said link and being pivotably movable by said link between two positions, said ladder being pivotable by means of said operating wire from one of its stowing and active positions up to a substantially vertical position in which the center of gravity of the ladder has passed a vertical line through the pivot center of the ladder, and a member having its one end attached to the ladder and its other end connected to the second arm of said link in such a manner that said member causes the link with the pulley to pivot from one of said two positions thereof to the other when the ladder is pivoted downwards further from said substantially vertical position.

4,436,181

ESCAPE SYSTEM

David Gutman, 447 Mercy St., Philadelhia, Pa. 19148

Filed Jun. 21, 1982, Ser. No. 390,578
Int. Cl.³ A62B *1/06*
U.S. Cl. 182—236 **10 Claims**

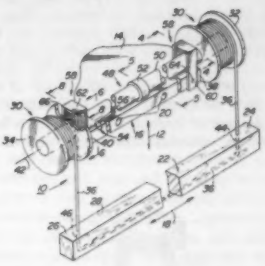
1. An escape system for vertically lowering a user at a predetermined rate of descent responsive to a user applied force, comprising:

(a) a mounting bar member extending in a longitudinal direction, said mounting bar member being fixedly secured to a base surface;

(b) seating means extending in said longitudinal direction for providing a seat for said user;

(c) pulley means displaceably coupled to said seating means on opposing longitudinal ends thereof; and,

(d) lever means secured to said pulley means on opposing ends thereof for (1) actuating rotation of said pulley means when said user applies a force load on a first longitudinal end of said seating means, and (2) terminating rotation of



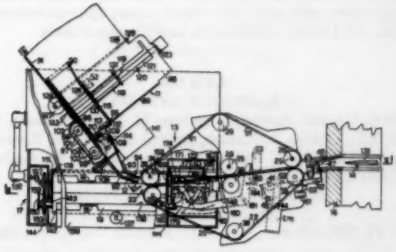
said pulley means when said user applies a force load on a second longitudinal end of said seating means.

4,436,182

APPARATUS FOR DEPOSITING VALUABLES IN ENVELOPES WITH AUTOMATIC ENVELOPE DISPENSING

Lucio Simonotti, Banchette d'Ivrea, and Carlo Motta, Borgofranco d'Ivrea, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Apr. 14, 1981, Ser. No. 254,140
Claims priority, application Italy, Apr. 16, 1980, 67587 A/80
Int. Cl.³ G07G *5/00*
U.S. Cl. 186—37 **13 Claims**



1. An apparatus for depositing valuables in envelopes, with automatic dispensing of envelopes, in which the envelopes to be deposited are inserted into a slot of the apparatus and conveyed into an internal drawer of the apparatus, comprising a magazine within the apparatus containing the empty envelopes, a conveyor for individually moving the envelopes, said conveyor including at least one pair of belts in contact with one another along a predetermined path between the slot and an internal deflection station, a reversible electric motor operable for selectively driving the belts in a first direction to dispense an envelope from the magazine to the slot and in a second direction to convey an envelope inserted in the slot toward the drawer, said magazine including a duct leading to the deflection station, the duct being disposed in such a way that an envelope coming from the conveyor does not enter it.

4,436,183

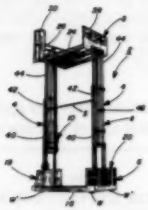
MATERIAL HANDLING APPARATUS

Victor R. Laurich-Trost, 34600 McAfee Dr., Solon, Ohio 44139

Filed Sep. 18, 1981, Ser. No. 302,515
Int. Cl.³ B66B *11/04*
U.S. Cl. 187—9 E **5 Claims**

1. A lift apparatus for use in material handling comprising a

chassis member mounted on wheel means for movement along the ground, a pair of laterally spaced, oppositely disposed mast assemblies extend upwardly from said chassis member, a lift platform assembly is disposed between and operably connected to said mast assemblies for vertical lifting movement toward and away from said chassis member, and fluid power means are operably associated with each of said mast assemblies to impart said lifting movement to said lift carriage assembly, wherein said wheel means includes a pair of steering and traction units each including a motor and a steering and traction wheel, and a pair of freely rotatable caster wheels, endless chain drive means operably connecting one of said caster



wheels with an associated one of said steering and traction units for synchronously turning said caster wheels upon actuation of an associated of said motors, and an operators cab mounted for movement with said lift carriage assembly, and steering control means operable from said operator's cab for controlling steering movement of said steering and traction units from said cab, wherein said steering and traction units each include driven sprocket means disposed for meshing engagement with said drive chain means and said orbital drive motors including drive sprocket means for driving meshing engagement with said drive chain means for synchronously turning said caster wheels with said traction wheels.

4,436,184

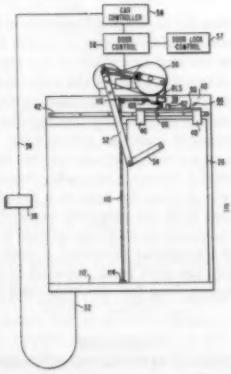
ELEVATOR SYSTEM

John G. Dorman, Randolph; Anthony M. Balbo, Millburn, both of N.J.; Charles E. Randall, Boiling Springs, and Robert A. Sette, Gettysburg, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 5, 1982, Ser. No. 375,249

Int. Cl.[3] B66B *13/16*

U.S. Cl. 187—29 R **21 Claims**



1. An elevator system, comprising:

a structure having a hatchway and a landing,

an elevator car,

means mounting said elevator car for movement in said hatchway from a position displaced from the landing to a predetermined position adjacent to the landing,

said elevator car having an opening,

closure means for controlling passenger movement between the car and landing through said opening,

marker means associated with the landing indicative of an allowable displacement zone of the elevator car from the landing within which the closure means may be actuated to allow passenger exit from the car, in the event the elevator car stops for an unscheduled length of time at a position other than level with said landing,

and electromechanical means responsive to said marker means, including means carried by said elevator car for detecting said marker means, and for mechanically preventing actuation of said closure means, at least to an extent which would enable passenger exit from the car, when the elevator car is outside said allowable displacement zone.

4,436,185

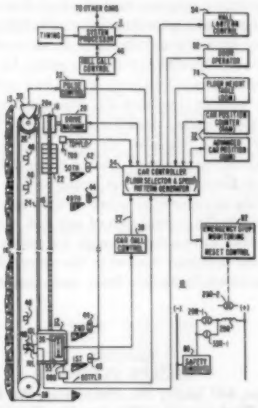
ELEVATOR SYSTEM

Richard H. Ludwig, West Caldwell; Wing C. Quan, Waldwick; Alan L. Husson, Hackettstown; Linus R. Dirnberger, Randolph, and Marjorie J. Polis, Morris Township, Morris County, all of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 20, 1982, Ser. No. 370,021

Int. Cl.[3] B66B *3/02*

U.S. Cl. 187—29 R **13 Claims**



1. A method of reinitializing an elevator system in a building having a plurality of floors, including upper and lower terminal floors, following an occurrence which may result in an elevator car being stopped at a position other than level with a floor of the building, comprising the steps of:

determining if the elevator car is within a predetermined distance from a floor,

setting the car position to the associated floor when it is found to be within said predetermined distance,

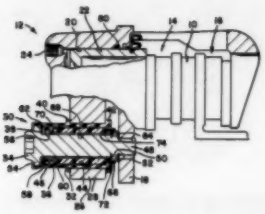
setting the car position to the closest floor to the elevator car in a predetermined travel direction, when the elevator car is not within said predetermined distance,

and moving the elevator car to a predetermined floor when it is not within said predetermined distance.

4,436,186
DISC BRAKE ASSEMBLY

Irving R. Ritsema, South Bend, and James J. Colpaert, Granger, both of Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Oct. 2, 1981, Ser. No. 307,918
Int. Cl.³ F16D *65/54*
U.S. Cl. 188—71.8 **11 Claims**

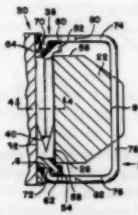


1. A disc brake assembly comprising a torque member secured to a nonrotatable portion of a vehicle, a caliper assembly movably disposed relative to the disc by means of at least one pin assembly connecting the caliper assembly to the torque member, a pair of friction elements cooperating with the caliper assembly during braking to engage the disc to retard rotation of the latter, and the pin assembly including a bolt threadably coupled to the torque member and extending through an opening in the caliper assembly, a resilient bushing engaged to the caliper assembly and extending through the caliper assembly opening, and a sleeve disposed between the resilient bushing and the bolt, characterized by said sleeve cooperating with said bolt to define a predetermined axial clearance therebetween, said predetermined axial clearance providing for said sleeve to move with said caliper assembly and said resilient bushing initially during braking, said resilient bushing moving relative to said sleeve after said predetermined axial clearance is taken up between said sleeve and bolt during braking in order to define an adjusted position for said resilient bushing and caliper assembly relative to said sleeve in response to wear of said friction elements, and said pin assembly further including a resilient member extending between said sleeve and said bolt to bias said sleeve to a position maintaining said predetermined axial clearance between said sleeve and said bolt.

4,436,187
DISC BRAKE ASSEMBLY

Daniel L. Bolenbaugh, and John R. Wegh, both of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 18, 1981, Ser. No. 322,349
Int. Cl.³ F16D *55/224*
U.S. Cl. 188—73.45 **2 Claims**

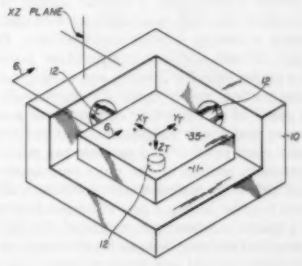


1. A disc brake assembly comprising a torque member disposed adjacent a rotor to be braked, the torque member including a pair of arms extending axially over the periphery of the rotor and circumferentially spaced from each other, a caliper assembly carried by the pair of arms via nonrotatable pin assemblies disposed within matching, axially extending slots between the caliper assembly and each of the pair of arms, and a resilient member engageable with one of the pair of pin assemblies, characterized by said one pin assembly including a pin having a longitudinal axis and flanges extending radially from said axis defining slots leading to central holes formed along said axis at opposite ends of said pin, said resilient member including ends biased to fit within the respective holes and legs biased to fit within the respective slots, one of said pair of arms defining an axially extending groove opening away from the caliper, said resilient member including a connecting part extending between said legs and disposed within said axially extending groove, said one pin assembly slots defining a first locking fit with said resilient member to prevent rotation of the latter about one of the matching slots, said axially extending groove defining a second locking fit with said resilient member to also prevent rotation of the latter about said one matching slot, and said one pin assembly extending from the holes and slots to the axially extending groove while remaining radially inwardly of a radial outer dimension for said one arm.

4,436,188
CONTROLLED MOTION APPARATUS

Cecil R. Jones, 21127 Bank Mill Rd., Saratoga, Calif. 95070

Filed Nov. 18, 1981, Ser. No. 322,466
Int. Cl.³ B06B *3/00*; F16D *3/22*
U.S. Cl. 188—378 **7 Claims**



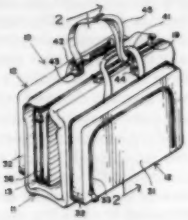
1. Controlled motion apparatus comprising a rigid base member, a support member, and means for mounting the support member to the rigid base for controlled motion relative to the base, said support member mounting means comprising three independently-driven displacement actuators each having a fixed part and a linearly movable part and having one of said parts connected by means of a first non-rotatable universal joint to a region of said support member and having the other of said parts connected by means of a second non-rotatable universal joint to a region of said rigid base, each of said actuators being capable upon actuation of causing a linear motion displacement of said support member along one of three orthogonal axes of an XYZ coordinate system but without permitting rotation about its respective displacement axis of the actuator movable part with respect to its fixed part or of the actuator fixed part in response to a linear displacement of the support along any of the three orthogonal axes, said non-rotating actuators by means of the first and second non-rotatable universal joint connections cooperating, during driving of the actuators to cause the said support member to undergo a controlled motion relative to the rigid base member, to maintain the support member substantially parallel to a desired plane formed by two axes of the coordinate system and to constrain the motion of said support member substantially parallel to said desired plane, and means connected to the apparatus for sensing the amount of support member displacement in its three displacement axes and generating signals representative of said displacement.

4,436,189

MULTI-PURPOSE TRAVELING BAG

Frank Baum, 1030 E. 30th St., Hialeah, Fla. 33013

Filed Apr. 8, 1982, Ser. No. 366,499
Int. Cl.³ A45C 5/06, 13/00
U.S. Cl. 190—108 1 Claim



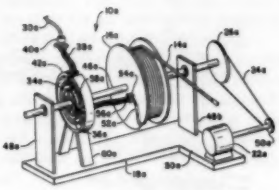
1. A multi-purpose traveling bag comprising, in combination a substantially rectangular, elongated garment bag portion, said garment bag portion comprising inner and outer flexible panels secured in spaced relation by a comparatively narrow flexible side panel, said inner and outer panels and said side panel defining, together, an interior compartment for hanging clothes, means for opening said interior compartment for the insertion and removal of clothes, a pair of side bag compartment portions of substantially rectangular shape and each having a flexible inside panel, a flexible outside panel and a flexible, peripheral side wall panel defining with said inside and outside panels a second interior compartment, the outside panel of each of said side bag compartment portions being fitted with a zipper strip for opening and closing said side bag compartment portion, zipper means for peripherally attaching said inside panel of said side bag compartment portions, one each, to upper and lower longitudinal end portions, respectively, of said outer panel of said garment bag portion, a briefcase compartment portion of the same rectangular shape as that of said side bag compartment portions, said briefcase compartment portion having a pair of opposed outside panels secured in a spaced relation by a peripheral, flexible, briefcase side wall panel and defining therewith a third interior compartment, zipper means in said peripheral briefcase side wall panel for opening and closing said briefcase interior compartment, zipper means for removably attaching said briefcase compartment portion, face-to-face against said inside panel of said garment bag portion at the lower longitudinal end portion thereof, and zipper means for detachably securing a lower edge portion of said inner panel of said elongated garment bag portion with the upper edge portion thereof upon said elongated garment bag portion being folded double to the inside from bottom to top, hand carrying means at the upper end of said garment bag portion when so folded and secured, said means for opening said interior compartment of said garment bag portion comprising a zipper extending along the upper end of said garment bag portion side panel, and a hook flexibly linked with respect to the inside of said interior compartment of said garment bag portion and extensible through said zipper when partially opened to permit hanging of said garment bag portion from a clothes pole or the like, said zipper means for peripherally attaching said inside panel of said side bag compartment portions being selectively cooperative with said zipper means for removably attaching said briefcase compartment portion against said inside panel of said garment bag portion, selectively, to detachably secure said side bag compartment portions, one each, to the sides of said briefcase compartment portion, said zipper strip for opening and closing each of said side bag compartment portions following a U-shaped course closely spaced to the peripheral sides and top of said side bag compartment portions to permit the opening and closing of said side bag compartment outside panels, and hand grip means extending outwardly of the upper end of said briefcase compartment portion.

4,436,190

TORSIONLESS MULTIPLE CONNECTOR REEL DEVICE

Timothy H. Wentzell, South Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jul. 29, 1981, Ser. No. 287,679
Int. Cl.³ H02G 11/00
U.S. Cl. 191—12.2 R 3 Claims



1. An apparatus to be electrically connected to a stationary output circuit, for advancing and retrieving an electrical input cable, comprising:

a stationary frame;

a drum carried by the frame and adapted to advance and retrieve the input cable by rotating about an axis;

a reel carried by the frame adjacent to and coaxial with said drum;

a flexible ribbon cable circumferentially coiled about said reel, the ribbon cable having its inner end adapted to connect to the tail end of the input cable and to rotate with the reel about said axis;

a housing enclosing the ribbon cable for maintaining the ribbon cable substantially concentric;

socket means carried by the frame and wired to the tail end of the ribbon cable, adapted to electrically connect the ribbon cable to the output circuit; and

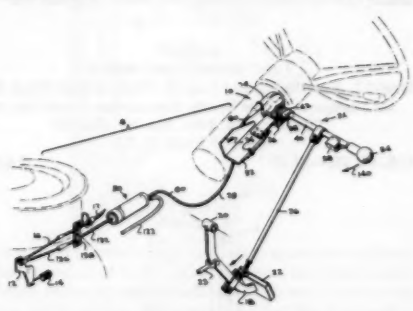
means for rotating the drum and reel simultaneously.

4,436,191

AUTOMOBILE HAND CONTROL

William E. Perry, 9417 Delancey Dr., Vienna, Va. 22180

Filed Dec. 15, 1981, Ser. No. 330,785
Int. Cl.³ B60K 41/20
U.S. Cl. 192—3 S 21 Claims



1. A vehicle control system for a vehicle having a throttle having a throttle spring tending to move the throttle to a closed position, said system including:

an operator actuated movable control member;

cable means having first and second ends with said first end being connected to said movable control member and said second end being connected to an engine throttle so that movement of the control member results in movement of the cable means and consequent movement of the engine throttle; and

air pressure actuated power assist means connected to said

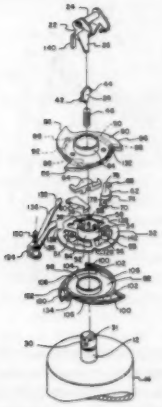
cable means for aiding in movement of said cable against the force of said throttle spring and for maintaining said cable means in any given position of adjustment while permitting a subsequent movement of the cable to a subsequent position of adjustment in response to subsequent movement of said movable control member.

4,436,192

RIBBON DRIVE CLUTCH

Scott J. Longrod, Woodbury, Conn., assignor to SCM Corporation, New York, N.Y.

Filed Oct. 14, 1981, Ser. No. 311,224
Int. Cl.³ F16D *11/06*; B41J *33/50*
U.S. Cl. 192—43.1 **11 Claims**



1. A ribbon drive clutch comprising a reversible stepper motor having an output shaft,

clutch plate means mounted on said output shaft,

first cam means mounted on said clutch plate means,

second cam means mounted on said clutch plate means,

pawl means mounted on said clutch plate means disposed to engage said first cam means for rotation with said output shaft responsive to rotation of said output shaft in a first direction and disposed to engage said second cam means for rotation with said output shaft responsive to rotation of said output shaft in a second direction,

first ribbon drive means,

second ribbon drive means,

first cam follower means disposed to operate said first ribbon drive means responsive to rotation of said output shaft in said first direction and,

second cam follower means disposed to operate said second ribbon drive means responsive to rotation of said second ribbon drive means in said second direction.

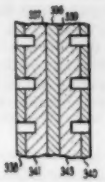
4,436,193

VARIABLE PULLEY TRANSMISSION

Richard L. Smirl, Arlington Heights, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 257,283, Apr. 24, 1981. This application Dec. 15, 1982, Ser. No. 449,894
Int. Cl.³ F16D *13/68*
U.S. Cl. 192—107 C **3 Claims**

1. A fluid cooled clutch including a generally annular laminated clutch disc assembly having an inner and an outer periphery which disc assembly comprises a central disc with opposed surfaces, a resilient material layer affixed to each surface, a friction material layer affixed to each resilient layer where each resilient layer is at least as thick as the friction material layer, and a pattern of grooves is provided in the friction material layer, which grooves extend completely through the friction material layer and through substantially all



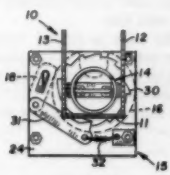
of the resilient layer, thus providing a path for coolant fluid flow in the laminated structure which is substantially greater than that of a grooved friction layer.

4,436,194

COIN OPERATED DELIVERY SYSTEM FOR VENDING MACHINES

James O. Hanley, 12838 Burwell Dr., Minnetonka, Minn. 5

Filed Aug. 3, 1983, Ser. No. 519,845
Int. Cl.³ G07F *5/02*
U.S. Cl. 194—63 **9 Claims**



1. A coin operated delivery system for a product vending machine comprising:

(A) an elongated open top horizontal channel,

(B) an elongated horizontally disposed helix within said channel,

(1) the coils of said helix being widely spaced apart to receive loosely therebetween a vertically disposed product to be dispensed,

(2) one end of said helix extending at least to the corresponding end of the channel, and

(C) a vertically disposed rotatable coin receiver mechanically linked directly to the opposite end of the helix, said coin receiver when containing the requisite amount of money being capable of manual rotation through at least one full rotation to rotate the helix through its direct mechanical linkage through one full rotation to discharge in a front to rear direction one unit of product contained therein from the remote end of the channel.

4,436,195

MULTI-COIN CHUTE MECHANISM

Donald C. Schmitt, Lithonia, and Melvin J. Harvill, Conyers, both of Ga., assignors to Reed Industries, Inc., Stone Mountain, Ga.

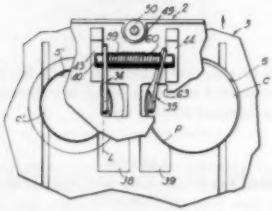
Filed Jun. 18, 1981, Ser. No. 274,878
Int. Cl.³ G07F *5/02*
U.S. Cl. 194—92 **5 Claims**

1. In a coin chute having a frame defining a coin-supporting surface, a slide movable over said surface and having at least one opening therein to define, with said surface, a coin socket for transporting a coin received therein along a path on said surface from an initial position to a coin discharge position, said surface having an opening at such discharge position to

allow a coin to drop from the socket, the improvement which comprises:

coin diameter gauging means for sensing an undersize coin or a spurious coin with a hole in it in said socket as the coin is transported toward said discharge position and for arresting movement of said slide upon the sensing of an undersize coin or a spurious coin with a hole in it,

said gauging means comprising a dog carried by said frame and having a tip engaging said slide, as the slide is moved, along a line which is within the widthwise confines of said path,



means mounting said dog on said frame for normally maintaining said tip in a generally upright plane passing through said line while allowing said tip to tilt relative to said upright plane and to shift laterally across said surface with respect to said line,

whereby when the slide is moved toward the discharge position, said tip actively seeks and penetrates deeply into any peripheral gap within said socket created by an undersize coin, or penetrates into the hole of a spurious coin with a hole in it and prevents further inward motion of the slide.

4,436,196

METHOD OF AND APPARATUS FOR ASSESSING COINS

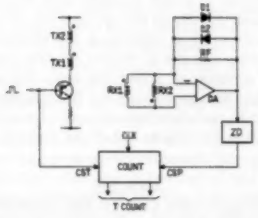
Malcolm Crisp, Swavesey, and Christopher Lewis, Ely, both of England, assignors to Plessey Overseas Limited, Ilford, England

Filed Jun. 18, 1981, Ser. No. 274,765

Claims priority, application United Kingdom, Jun. 20, 1980, 8020338

Int. Cl.³ G07F *3/02*

U.S. Cl. 194—100 A **6 Claims**



1. A coin discriminating apparatus comprising first and second coil sets each comprising a transmit and receive coil, each set arranged to be subject to an abrupt flux change and associated with a coin runway in such a manner that a coin passing along the runway travels through a coil set and the transmit coils of both coil sets are driven in series by an abrupt flux change generator which is operable as the coin passes the said coil set, and the receive coils of the coil sets are connected in parallel and in opposition to each other and across the inputs of a differential amplifier whose output is used to drive a zero detector, the composite waveform produced being indicative of the coin passing the coils and the apparatus includes means for comparing the composite waveform with stored information indicative of acceptable coins.

4,436,197

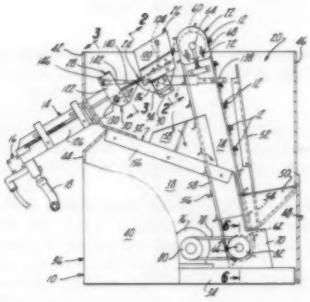
ARTICLE ORIENTING APPARATUS

Murdo A. MacDonald, Bloomfield Hills, Mich., assignor to Clyde Corporation, Auburn Heights, Mich.

Filed Jan. 15, 1982, Ser. No. 339,830

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—389 **11 Claims**



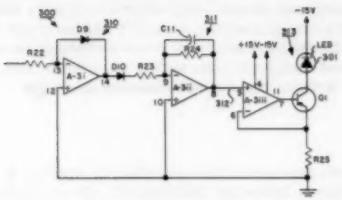
1. An apparatus for orienting articles each having a head and a reduced shank comprising, a track having a pair of generally parallel and laterally spaced apart rails constructed and arranged to receive the head of an article thereon with at least a portion of the shank thereof depending therebetween, said track sloping downwardly such that articles received thereon will slide toward the lower end thereof, a discharge section of said track being constructed and arranged to be movable to a first position in generally longitudinal alignment with said track such that articles received thereon will slide toward the lower end of said discharge section and to a second position wherein at least a portion of said discharge section is displaced from said first position such that articles will drop off said discharge section, a gate associated with said track and constructed and arranged to permit only articles received on said track with their heads bearing on said rails and their shanks depending therebetween to move on said track downstream of the lower end of said discharge section and to prevent articles bearing on said track in any other orientation from moving downstream of the lower end of said discharge section, article delivery means associated with said track and constructed and arranged to repeatedly dump articles onto said track upstream of said gate, drive means constructed and arranged to move said discharge section of said track to said first and second positions, and cycle means associated with said drive means and constructed and arranged to periodically cycle said drive means to move said discharge section of said track from said first position to said second position and back to said first position, whereby at least some of the articles dumped onto said track by said article delivery means are received on said track with their heads bearing on said rails and their shanks depending therebetween and at least some of such articles so received on said track and not so oriented are prevented by said gate from passing downstream thereof and the periodic cycling of said discharge section of said track removes therefrom any not so oriented articles bearing on said discharge section such that a succession of only oriented articles emerge from said track downstream of said gate.

4,436,198

CONVEYOR BELT SYSTEM HAVING A PHASE SHIFT INDICATOR AND ADJUSTER FOR OPTIMUM TUNING OF A SYNCHRONOUS RIP DETECTOR CIRCUIT

Robert J. Houck, Akron, Ohio, and Kevin J. King, Coon Rapids, Minn., assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,712
Int. Cl.³ B65G 43/06
U.S. Cl. 198—502 3 Claims



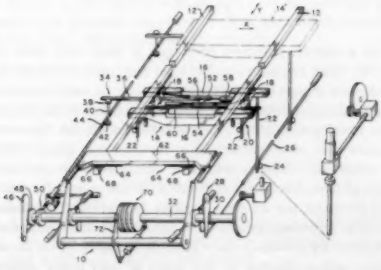
1. In a conveyor belt assembly, with rip detection capabilities, a circuit for shifting the phase of one signal relative to another signal and for determining the synchronous relationship therebetween, comprising: first means for producing digital information directly coordinated with the instantaneous time frame development of such another signal, thumbwheel switch means for setting a predetermined phase relation of such one signal relative to such another signal, comparator means responsive to such digital information and said set means for producing an output signal representative of the phase of such one signal, output means responsive to such output signal for producing such one signal at a phase corresponding thereto and light emitting diode means for illuminating in intensity inversly proportionately to the degree of synchronization of the phase relationships.

4,436,199

CAM-OPERATED MULTISTROKE FEED MECHANISM

Kiyokazu Baba, Komatsu, and Kenji Nishida, Matsuto, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 18, 1982, Ser. No. 379,447
Claims priority, application Japan, Oct. 8, 1981, 56-159398
Int. Cl.³ B65G 25/04
U.S. Cl. 198—750 9 Claims



1. In apparatus for transferring or feeding articles, the apparatus including a feed member which reciprocates for causing such transferring or feeding motion, a multistroke feed mechanism for reciprocating the feed member over any selected one of a plurality of preassigned different strokes, the multistroke feed mechanism comprising:

(a) a rotatable camshaft;

(b) a set of feed cams having differently contoured surfaces and mounted side by side on the camshaft, the feed cams being jointly movable axially of the camshaft while being constrained to simultaneous rotation therewith;

(c) a cam follower arranged for engagement with the contoured surface of one of the feed cams;

(d) means defining a pair of opposed fluid chambers acting between the camshaft and the set of feed cams for moving the latter axially of the camshaft to a desired position where a selected one of the feed cams is engaged by the cam follower; and

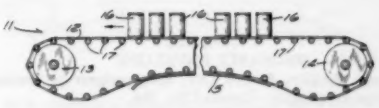
(e) a linkage for operatively connecting the cam follower to the feed member in order to cause the latter to reciprocate over a distance determined by the contoured surface of the selected feed cam in engagement with the cam follower.

4,436,200

LOW FRICTION FLAT-TOP ARTICLE CARRYING CHAIN

Wasily G. Hodlewsky, Greendale, and William H. Bloedorn, West Allis, both of Wis., assignors to Rexnord Inc., Milwaukee, Wis.

Continuation of Ser. No. 653,564, Jan. 29, 1976, abandoned, which is a continuation of Ser. No. 225,845, Feb. 14, 1972, abandoned. This application Jul. 23, 1979, Ser. No. 59,851
Int. Cl.³ B65G 17/40
U.S. Cl. 198—851 6 Claims



1. A chain comprising links interconnected by pins for articulation and having a tensile strength, wear resistance and low coefficient of friction for operation on rigid supporting guide ways of a dissimilar material, the improvement wherein each such link comprises an injection molded thermoplastic unitary monolithic acetal resin with a uniform dispersion of random oriented tetraflouroethylene monofilamentous fibers in a selected proportion embedded therein, said proportion being less than that which would measurably reduce the tensile strength of the link, the comparison being with similarly connected links molded under the same conditions entirely of the same acetal resin alone and using the same accepted measurement procedure, and said proportion being greater than 1.3% by weight and such that the number of fibers exposed to the guide ways are sufficient to reduce the coefficient of friction of the link with the guide ways to 0.2, said coefficient being well below that indicated by accepted test procedures using test specimens of the same resin with the same fibers in said proportion.

4,436,201

DISC CARTRIDGE HAVING A DETACHABLE LID

Shosei Inaba, Sagamihara, Japan, assignor to Victor Company of Japan Limited, Yokohama, Japan

Filed Nov. 8, 1982, Ser. No. 440,158
Claims priority, application Japan, Nov. 11, 1981, 56-167141[U]; Nov. 19, 1981, 56-171455[U]
Int. Cl.³ B65D 85/30, 85/57; F16F 1/22
U.S. Cl. 206—444 8 Claims

1. A disc cartridge for containing an information recording disc therein, comprising:

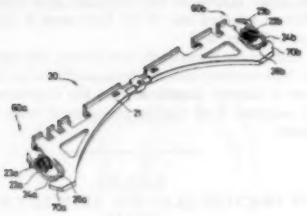
(a) a cartridge body having an opening at one end thereof for inserting and taking out a recording disc therethrough;

(b) a lid detachably engaged with said end for covering said opening when engaged with said cartridge body, said lid

having a lid body and a pair of engaging means provided at both ends of said lid body for the engagement of said lid with said cartridge body, said lid body and said engaging means being integrally formed of a synthetic resin;

said engaging means having:

a lock arm having a curved portion, one end of said lock arm being connected to said lid body, a projection, which will be received in a recess made in said cartridge



body, being provided in the vicinity of the other end of said lock arm;

a plurality of leaf spring elements constituting a generally zigzag-shaped spring means, which is interposed between one end of said lid body and said lock arm, each of said leaf spring elements being connected to another at its end to form consecutive V-shapes, every other leaf spring element in said zigzag-shaped spring means has a thin portion and a thick portion.

4,436,202

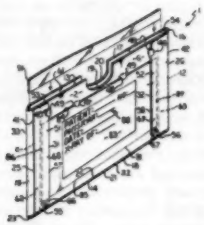
REUSABLE ENVELOPE

E. Bertram Berkley, Kansas City, Mo., assignor to Tension Envelope Corporation, Kansas City, Mo.

Filed Sep. 20, 1982, Ser. No. 420,127

Int. Cl.³ B65D *85/48*

U.S. Cl. 206—455 **9 Claims**



1. An envelope for removably receiving and retaining a card insert with opposite side margins, which comprises:

(a) an exposed front panel having an inner and an outer surface, an upper and a lower edge, and opposite side edges;

(b) an exposed back panel having an inner and an outer surface, an upper and a lower edge, and opposite side edges; said back panel being integrally connected to said front panel and demarcated therefrom by a lower edge fold line along said front and back panel lower edges;

(c) said back panel being folded along said lower edge fold line with respect to said front panel and positioned adjacent thereto;

(d) said front and back panels forming a pocket therebetween open at said front and back panel upper edges;

(e) a pair of opposed side flaps each having a respective side flap edge and each being integrally connected to said back panel and demarcated therefrom by a respective fold line along said side flap edge and a respective back panel side edge, each said side flap being attached to said front panel outer surface and positioned exteriorly with respect to said envelope;

(f) a pair of extensions each attached to a respective side flap and extending inwardly therefrom; each said extension having a lower portion secured to said front panel outer surface and an unsecured upper portion;

(g) each said extension including an extension inner side edge, said extension inner side edges being positioned in spaced, opposed relationship; and

(h) a pair of closures each formed between said front panel outer surface and a respective extension unsecured portion; each said closure being adapted to slidably and releasably receive therein a respective said insert side margin whereby said card insert is removably retained adjacent said front panel outer surface and whereby said card insert is visible between said extension side edges.

4,436,203

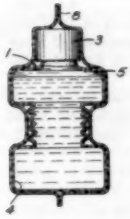
TAMPER RESISTANT PACKAGING DEVICE

Ellis M. Reyner, New Brunswick, N.J., assignor to Joy Research Incorporated, New Brunswick, N.J.

Filed May 10, 1983, Ser. No. 493,363

Int. Cl.³ B65D *81/20, 85/86*; G01L *19/12*

U.S. Cl. 206—524.8 **33 Claims**



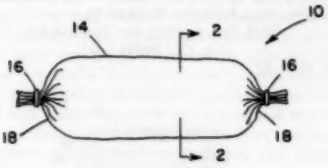
1. In a tamper-resistant package, at least one over sized closeable outer enclosure and at least one inner enclosure fitted with closure means containing at least one flowable material in addition to the product, and means associated with said package for making available higher pressure inside the inner enclosure than that of its surrounding atmosphere, space between said outer and inner enclosures contains a predetermined amount of flowable material suitable for the proper functioning of said package, the internal pressure in said outer enclosure is reduced to a predetermined level below that of its surrounding atmosphere by drawing out a suitable quantity of its flowable contents before closing it, the walls of said outer enclosure press against the walls of said inner enclosure which holds the product and restricts its movement therein to a predetermined extent, means associated with said package for manifesting evidence that tampering with said package has occurred in the event that the contents in said inner enclosure is tampered with through at least one aperture made in said walls of said package leading to the product therein.

4,436,204

DRYWALL JOINT COMPOUND PACKAGING

Gerard T. Sowinski, Lancaster, N.Y., assignor to National Gypsum Company, Dallas, Tex.

Filed Dec. 9, 1982, Ser. No. 448,291
Int. Cl.³ B65D 75/48, 77/12
U.S. Cl. 206—525 10 Claims



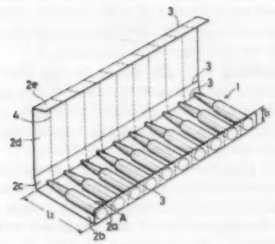
1. A package of ready-mix joint compound comprising a cylindrical plastic tube gathered and sealed at each end and filled with an aqueous slurry of drywall joint compound.

4,436,205

AMPULE CASE

Isamu Horii, Osaka, Japan, assignor to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Mar. 31, 1982, Ser. No. 363,920
Claims priority, application Japan, Apr. 3, 1981, 56-50897
Int. Cl.³ B65D 85/42, 73/00
U.S. Cl. 206—530 7 Claims



1. An ampule case comprising one or more L-shaped base sheets in which the long side of each L extends along one side of the ampule, means effecting adherence between the short side of each L and the bottom side of each ampule and means formed as an integral extension of each base sheet covering at least one other dimension of said ampule.

4,436,206

RECLOSABLE PAPERBOARD CARTON STRUCTURE

Morris W. Kuchenbecker, Neenah, Wis., assignor to James River/Dixie-Northern, Inc., Norwalk, Conn.

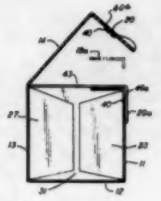
Filed Sep. 15, 1981, Ser. No. 302,388
Int. Cl.³ B65D 5/54
U.S. Cl. 206—625 18 Claims

1. A reclosable paperboard carton structure comprising:

an open-top body portion including upstanding front and rear walls and opposed end walls;

a cover including a top wall hinged along an edge portion thereof to said rear wall, and a depending front flap on the free edge portion of said top wall opposite the recited hinged edge portion; and

means releasably adhering said flap to said front wall comprising adhesive on said front wall and said flap in predetermined areas thereof defined by a pattern of discontinuous first knife cuts provided in at least one of said front wall and said flap, whereby said flap is releasable to open said top wall by pulling said flap away from said front wall



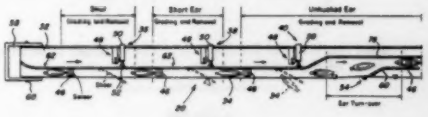
and peeling the surfaces of said areas of paperboard defined by said first knife cuts.

4,436,207

AUTOMATIC CORN SORTING AND INSPECTION SYSTEM

Edward L. Klukis, 1270 Marshall Dr., S.E., Salem, Oreg. 97302

Filed May 8, 1981, Ser. No. 261,942
Int. Cl.³ B07C 5/10; G02B 5/16
U.S. Cl. 209—577 4 Claims



4. An automatic sorting and inspection system for articles of food, comprising a plurality of grading and removal stations, each station including means for sensing a particular characteristic of the articles, means for conveying each of the articles through each of the stations, and means for removal of the articles from the conveying means at each of the stations, said sensing means including a plurality of fiber optic tubes having ends positioned above said conveying means, means for transmitting light through said optic fiber tubes, mounting means for anchoring the ends of the optic fiber tubes and spring means connected to the mounting means for rectilinear movement thereof to enable the ends of the optic fiber tubes to follow contours of the articles during travel on the conveying means.

4,436,208

GUIDE MEMBER FOR A ROLLER-TYPE CLASSIFYING MACHINE

Walter I. Cronan, 125 Lakeview Ave., Leonia, N.J. 07605

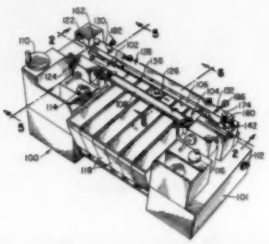
Filed Jan. 4, 1982, Ser. No. 336,633
Int. Cl.³ B07C 5/04
U.S. Cl. 209—668 24 Claims

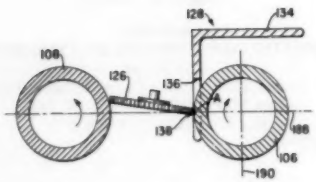
1. An improved classifying machine having first and second rollers supported with their rolling surfaces facing and spaced apart from each other, said rollers having respective axes of rotation lying in the same plane, said apparatus including means for rotating said rollers about their axes as a workpiece is fed along at least a portion of the rollers' length while the workpiece is seated between and in contact with the roller' surfaces, the improvement comprising:

an elongated guide member including a tensioned filament disposed between said rollers and extending along a substantial part of the length of said rollers, and

means positioning said filament at a position where it provides vertical support to the workpiece while the workpiece is seated in contact with the surfaces of both rollers, and positioning said filament relative to said rollers so that

when said workpiece is seated in contact with said rollers and said filament, the center of gravity of the workpiece





must rise in order for the workpiece to break contact with either of the roller surfaces.

4,436,209

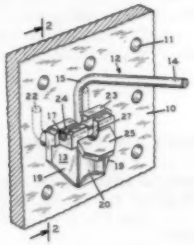
MERCHANDISE DISPLAY HOOK

David R. Thalenfeld, Beachurst, N.Y., assignor to Trion Industries Inc., Wilkes-Barre, Pa.

Continuation-in-part of Ser. No. 151,357, May 19, 1980, Pat. No. 4,351,440, Continuation-in-part of Ser. No. 918,483, Jun. 23, 1978, abandoned. This application Sep. 18, 1981, Ser. No. 303,419

Int. Cl.³ A47F 5/00

U.S. Cl. 211—57.1 **10 Claims**



1. A two part merchandise hook or the like which comprises
(a) a formed wire support element having an outwardly extending portion and a downwardly extending stabilizing portion,
(b) a hinge bar secured to said support element;
(c) a molded plastic base member including spaced, L-shaped mounting lugs adapted for reception in an apertured display panel,
(d) said base member having an open-sided hinge recess for the reception of said hinge bar,
(e) said base member being pivotable about said hinge bar when assembled therewith,
(f) the open side of said recess being of smaller dimension than the diameter of said hinge bar, whereby said hinge bar is forceably inserted into said recess and is self-retaining therein after assembly.

4,436,210

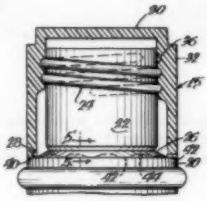
THREADED CAP FOR SEVERING A CLOSURE FROM A HERMETICALLY SEALED CONTAINER

Gerhard H. Weiler, South Barrington, and Louis T. Pagels, Hanover Park, both of Ill., assignors to Automatic Liquid Packaging, Inc., Arlington Heights, Ill.

Filed Apr. 1, 1982, Ser. No. 364,476

Int. Cl.³ B65D 1/02

U.S. Cl. 215—32 **4 Claims**



1. A sealed package comprising:
a hermetically sealed plastic container having a body portion provided with an annular bearing surface and a cover integral therewith but adapted to be severed therefrom; and
a cap threadedly engaged with said cover and operable to sever said cover from said body portion when said cap is threaded down on said container to abut the bearing surface and thereby open said container;
said cap defining a discontinuous bottom edge adapted to bear against said container annular bearing surface as the cap is threaded down onto said container, whereby the surface area contact between said bottom edge and shoulder is substantially reduced;
said bottom edge further comprising a plurality of alternating circumferentially spaced prominences and recesses, only said prominences being adapted to bear against said annular bearing surface of said container; and
said prominences being arcuate so that the surface area contact between a prominence and said container annular bearing surface is substantially tangential.

4,436,211

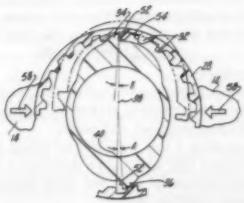
SAFETY PACKAGE

Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Dec. 17, 1982, Ser. No. 450,686

Int. Cl.³ B65D 55/02

U.S. Cl. 215—216 **9 Claims**



1. A safety package comprising: a container having a cylindrical neck portion forming an opening, a cylindrical cap

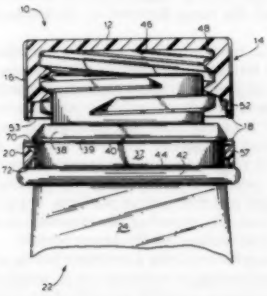
disposed on said neck for closing said opening, complementary cam means on said neck of said container and on said cap to permit relative axial movement between a first position closing said opening and a second position permitting removal of said cap upon relative rotation of said cap and container less than one turn, said cap including an outer skirt concentric with said cap, a plurality of ratchet teeth uniformly spaced on the circumference of said skirt, a lock element on said container engageable with said teeth to permit rotation of said cap in a closing direction toward said first position and being engageable with any one of said teeth to substantially prevent relative rotation of said container and cap toward said 2nd position for a distance more than the spacing between adjacent teeth, said skirt being deformable by simultaneous radial pressure at diametrically spaced points on said skirt spaced approximately 90° from said lock element to move said one of said teeth radially outward and disengage said lock element from said one of said teeth to permit relative rotation of said cap and closure in an opening direction.

4,436,212

TAMPER PROOF CLOSURE

Santos A. Alejandro Llera, San Juan, P.R., assignor to Precision Plastic Products Corp.

Continuation-in-part of Ser. No. 185,889, Sep. 10, 1980, Pat. No. 4,380,299. This application May 5, 1982, Ser. No. 375,207
The portion of the term of this patent subsequent to Apr. 19, 2000, has been disclaimed.
Int. Cl.³ B65D *49/12*
U.S. Cl. 215—252 **21 Claims**



1. A tamper proof closure for a container with a neck finish having a threaded portion and a retaining means therebelow having a bottom surface, said closure comprising:

a body having a substantially straight side wall having an inner surface with an internally threaded portion located on said inner surface and on its external surface having located thereon a plurality of spaced ribs;

a breakaway skirt therebelow;

a frangible connecting means for connecting said breakaway to said side wall including a plurality of straps formed from a select number of ribs by an undercut in the side wall which extends outward from said inner surface;

said breakaway skirt being adapted to slide over said retaining means as the closure is threaded onto the container and to be disposed below of and adjacent to said retaining means when said closure is fully threaded onto the container;

whereby when the closure is unthreaded from the container, the breakaway skirt will be severed from the body at the frangible connecting means by the bottom surface of said retaining means acting on the breakaway skirt leaving said breakaway skirt on the container as an indication of tampering.

4,436,213

CONTAINER HAVING TAMPER EVIDENT SEAL AND IMAGED POLYMER FILM USEFUL AS SUCH A SEAL

Fred R. Paul, Jr., Chisago, and James S. Mrozinski, Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Nov. 5, 1982, Ser. No. 439,638
Int. Cl.³ B65D *51/00*
U.S. Cl. 215—365 **11 Claims**

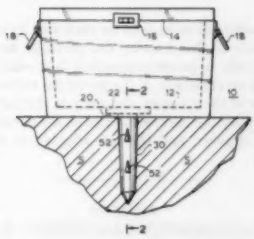
1. A container having walls defining a cavity and an opening into said cavity covered by a tamper evident seal comprising a normally transparent polymer film which can be repeatedly rendered temporarily translucent by stretching and transparent by relaxing.

4,436,214

ANTI-THEFT PICNIC DEVICE

David Henderson, 14 Chester Rd., Darien, Conn. 06820

Filed Dec. 20, 1982, Ser. No. 450,987
Int. Cl.³ B65D *25/24*; E02D *5/80*
U.S. Cl. 220—18 **13 Claims**



1. A securable beach picnic chest assembly comprising, in combination, a picnic chest having a floor, a closable lid, locking means for locking said lid, and carrying handles, with the chest being constructed to be of sufficiently light weight to be hand-portable, and with the floor having a through opening; and a locking spike device extending through said through opening and including a body portion, an insertion point at a lower end of the body portion, a shoulder at an upper end of the body portion securing the picnic chest to the locking spike device, a plurality of locking spikes having at least anchoring portions thereof disposed outside said body portion, slide means within said body portion coupled to said locking spikes and displaceable between first and second operative positions, and an actuator handle within said picnic chest and operative selectively to displace said slide means to said first position in which said anchoring portions of said locking spikes are disposed against said body portion so that said locking spike device can be inserted into and withdrawn from sand or soft soil, and to said second position in which said anchoring portions of said locking spikes are angled outwardly from said body portion to anchor said locking spike device and picnic chest in place in the sand or soft soil.

4,436,215

STORAGE DRAWER WITH RETAINED PARTITIONS

Karl W. Kleinert, 19601 Beach Cliff Blvd., Rocky River, Ohio 44116, and Kenneth B. Kleinert, 1285 E. Melrose Dr., Westlake, Ohio 44145

Filed Jan. 21, 1982, Ser. No. 341,464
Int. Cl.³ B65D *1/24, 25/04*
U.S. Cl. 220—22.3 **7 Claims**

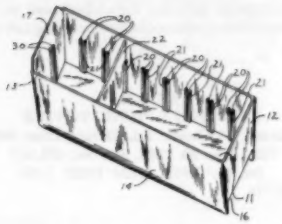
1. A storage drawer which comprises:

a bottom;

two ends extending from the bottom;

two sides extending from the bottom between the two ends, each side having a plurality of longitudinally spaced slots

extending from the bottom, each slot defined by two edges, the edges being formed by a pair of ridges which extend from the side, the edges converging as the slot extends toward the bottom so that each slot becomes narrower as its extends toward the bottom, each ridge having a recess extending into the ridge from the edge of the slot and extending from the top of the slot toward the bottom thereof, the recesses for each pair of ridges being opposite each other, each recess extending into the ridge in a direction generally perpendicular to the slot; and



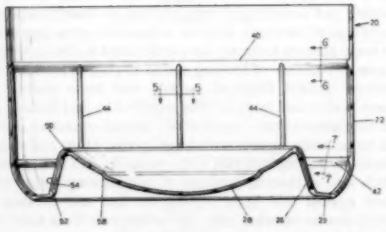
a partition adapted to be held on each side by one of the slots on the side of the drawer, the partition having a pair of diametrically opposed protruding tabs which extend from each end on each side of the partition, each tab adapted to fit in one of the recesses, the sides of the partition adapted to be held by the narrowing slot as the partition is inserted into the drawer, and the tab adapted to be held in the recesses.

4,436,216

RIBBED BASE CUPS

Long F. Chang, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 30, 1982, Ser. No. 412,673
Int. Cl.³ B65D *23/00*
U.S. Cl. 220—69 **22 Claims**



1. A base cup for receiving a container having a generally spherical bottom comprising, in combination, an annular sidewall, a seating ring extending generally inwardly from said sidewall, a generally frusto-conical support member extending upwardly and inwardly from said seating ring and a support platform having a container receiving surface, at least one circumferential rib disposed on said annular sidewall, at lesat one lower rib disposed on said seating ring and a plurality of generally vertically oriented ribs extending between said circumferential rib and said lower rib, a pair of concentric ribs, one of said concentric ribs disposed generally at the intersection of said seating ring and said support member, the other of said concentric ribs disposed generally at the intersection of said support member and said support platform.

6. A base cup for receivng a container having a hemispherical bottom comprising, in combination, an annular sidewall having a thickness of about 20 mils, a seating ring extending generally inwardly from said sidewall, a generally frusto-conical support member extending upwardly and inwardly from said seating ring and a support platform having a container receiving surface disposed within said seating ring, said seating ring, said support member, and said support platform having a thickness of about 25 mils, at least one circumferential rib disposed on said annular sidewall, at least one lower rib disposed on said seating ring and a plurality of generally vertically oriented ribs extending between and intersecting said circumferential rib and said lower rib, said ribs each having a thickness of about 40 to 45 mils, a second lower rib disposed generally on said seating ring and spaced inwardly from said lower rib, a third lower rib disposed generally at the intersection of said support member and said support platform, a plurality of generally conically oriented ribs on said support member extending between said second lower rib and said third lower rib, a circumferential step in said support platform and a plurality of radially oriented, intersecting ribs disposed on said support platform within said circumferential step.

7. A base cup for receiving a container having a hemispherical bottom comprising, in combination, an annular sidewall having a thickness of about 20 mils, a seating ring extending generally inwardly from said sidewall, a generally frusto-conical support member extending upwardly and inwardly from said seating ring and a support platform having a container receiving surface disposed within said seating ring, said seating ring, said support member, and said support platform having a thickness of about 25 mils, at least one circumferential rib disposed on said annular sidewall, at least one lower rib disposed on said seating ring and a plurality of generally vertically oriented ribs extending between and intersecting said circumferential rib and said lower rib, said ribs each having a thickness of about 40 to 45 mils, a second lower rib disposed generally on said seating ring and spaced inwardly from said lower rib, said ribs being disposed on the inside of said base cup.

10. A plastic base cup for receiving a container having a hemispherical bottom comprising, in combination, an annular sidewall, a seating ring extending generally inwardly from said sidewall, a generally frusto-conical support member extending upwardly and inwardly from said seating ring and a support platform having a container receiving surface, at least one circumferential rib disposed on said annular sidewall, an annular thickened portion at substantially the intersection of the support member and the support platform, and a plurality of substantially conically extending ribs disposed on said support member and intersecting said thickened portion.

16. A base cup for receiving a container having a hemispherical bottom comprising, in combination, an annular sidewall, a seating ring extending generally inwardly from said sidewall, a generally frusto-conical support member extending upwardly and inwardly from said seating ring and a support platform having a container receiving surface, at least one circumferential rib disposed on said annular sidewall, a pair of substantially concentric ribs, one of said ribs disposed at substantially the intersection of said seating ring and said support member and the other of said ribs disposed at substantially the intersection of said support member and said support platform and a plurality of substantially conically extending ribs disposed between and intersecting said pair of concentric ribs.

4,436,217

PAINT BRUSH SUPPORT

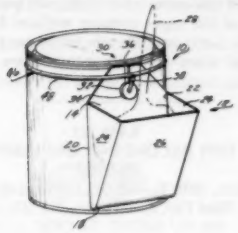
John C. Ritter, 12645 Duchess, Detroit, Mich. 48224

Filed Dec. 4, 1981, Ser. No. 327,413
Int. Cl.³ A46B *17/02*
U.S. Cl. 220—85 D **6 Claims**

1. A paint brush support attachable to the outer portion of a paint container having a bale attached to the outer portion of the paint container by a bale attachment button, the paint brush support comprising:

a brush container, the brush container comprising a vessel having an open top, an inside wall having a top edge, opposed side walls and an outside wall;

an aperture formed in the inside wall of the brush container, the aperture being snugly engageable with the bale attachment button to support the brush container on the paint container; and



a slot extending from the top edge of the inner wall of the brush container to the aperture to clear the bale when mounting the brush container on the bale attachment button.

4,436,218

REVERSE BUCKLING BURSTING DISC

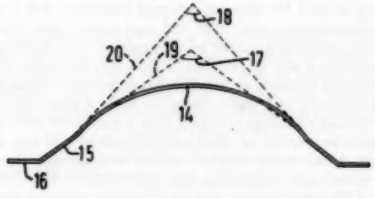
John G. Beese, Cardiff, England, assignor to IMI Marston Limited, Wolverhampton, England

Filed Jan. 26, 1982, Ser. No. 342,803

Claims priority, application United Kingdom, Feb. 19, 1981, 8105237

Int. Cl.³ F16K *17/40*

U.S. Cl. 220—89 A **8 Claims**



1. A reverse buckling pressure relief disc adapted to be disposed, in use, with its convex side towards the higher pressure encountered in use, wherein the improvement comprising the disc having a central domed region, an outer flange and an integral transitional region interconnecting the flange and the central domed region, the transitional region being of generally frusto-conical shape and having an included angle in the region 170° to 70°, the included angle of the tangents of the domed region taken where the central domed region meets the transitional region being less than the said included angle of the transitional region.

4,436,219

SEALING CAP FOR A GASOLINE TANK

Heinrich Reutter, Waiblingen, Fed. Rep. of Germany, assignor to Reutter Metallwarenfabrik GmbH, Waiblingen, Fed. Rep. of Germany

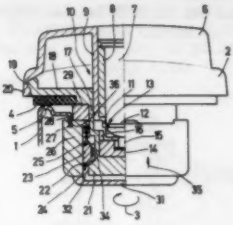
Filed Nov. 24, 1982, Ser. No. 444,205

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1981, 3146824

Int. Cl.³ B65D *41/96, 41/36*

U.S. Cl. 220—295 **22 Claims**

1. Sealing cap with turning stop (26) for placing on a filler neck (1) provided with a counter stop (27), in particular of a gasoline tank, which is supported with the intermediary of a sealing ring (4) on the free end (5) of said filler neck, wherein said turning stop engages under a neck edge (36) facing into the neck interior, characterized in that a turning handle (2) carries a slide surface (21) which simultaneously forms a turning carrier (32) for said turning step (26), wherein said turning carrier



and said turning stop are coupled via a turning lifting apparatus (24, 43) and in that a turning protection member (29) rotatably supported at said turning handle is rotatably supported in said neck (1).

4,436,220

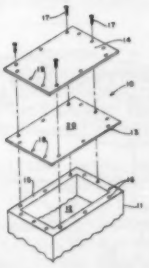
HERMETIC PACKAGE USING MEMBRANE SEAL

Louis D. Simmons, Arnold, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 29, 1982, Ser. No. 393,266

Int. Cl.³ B65D *41/00*

U.S. Cl. 220—359 **4 Claims**



1. A solderable, hermetically sealed reuseable container which comprises:

a. a container body defining a cavity therein and presenting a solderable surface defining an opening for said container:

b. a thin, reuseable, solderable metallic membrane for hermetically sealing said opening by interfacing with said solderable surface by the application of heat around the periphery of said membrane;

c. a solder seal interfacing said membrane and said solderable surface;

d. a protective plate covering said membrane; and

e. means for removably attaching said protective plate to said container body.

4,436,221

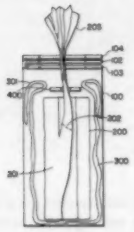
CONTAINER AND DISPENSING PLATE FOR A ROLL OF PRE-MOISTENED TOWELETTES

Herman Margulies, Westfield, N.J., assignor to Sterling Drug Inc., New York, N.Y.

Filed Oct. 12, 1978, Ser. No. 950,616

Int. Cl.³ A47K *10/38*

U.S. Cl. 221—46 **9 Claims**



7. A device for dispensing and separating a single perforated sheet from a continuous roll of sheets which are joined at perforations, said device comprising a substantially rigid plate having therethrough a dispensing opening dimensioned to allow an end sheet of a roll to slide therethrough, a slit having a first end opening into said dispensing opening and a second end, and sloped edges converging toward said second end of said slit from an outer edge of said plate, whereby said end sheet of said roll slides through said slit into said dispensing opening, and the remaining sheets are pulled directly through said dispensing opening.

4,436,222

APPARATUS FOR DISPENSING CONTAINERS

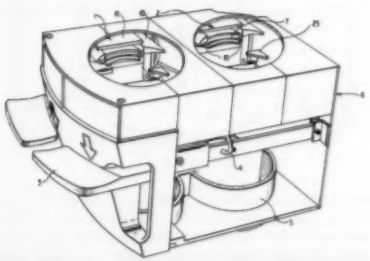
Michael Taylor, Lower Norton, Nr. Warwick, and Malcolm D. N. Withnall, Moreton Morrell, both of England, assignors to Mars Limited, London, England

Filed Dec. 10, 1981, Ser. No. 329,708

Claims priority, application United Kingdom, Dec. 18, 1980, 8040531

Int. Cl.³ B65H *3/24*

U.S. Cl. 221—223 **7 Claims**



1. Apparatus for dispensing containers from a stack, comprising a plurality of jaw assemblies evenly spaced around a common vertical axis, each jaw assembly having a catch member and a lever member pivotable about horizontal axes between a first rest position in which the catch member is pivoted upwards away from the common axis to allow a stack of containers to pass it and rest on a lower support surface of the lever member and a second dispensing position in which an upper support surface of the catch member is positioned to support the stack of containers and the lever member is pivoted downwards away from the common axis to allow the lowermost of the stack of containers to pass it, wherein the inner edges of the upper and lower support surfaces form concave segments of a circle of substantially the same radius as the containers, each said lever member having an upper pressure surface opposed to and spaced from its lower support surface so as to apply downward pressure to the top of the lowermost of the stack of containers when in the said second position, the inner edges of the upper pressure surfaces forming concave segments of a circle and wherein the upper pressure surfaces are horizontal when the lever members are in their second position.

4,436,223

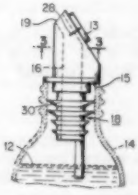
DEVICE FOR RECORDING THE DISPENSING OF FLUIDS

Jerry L. Wilson, 2810 E. 46th St., Chattanooga, Tenn. 37407

Filed Feb. 3, 1981, Ser. No. 231,244

Int. Cl.³ B67D *5/22*; G01F *11/26*

U.S. Cl. 222—36 **5 Claims**



1. In combination, a dispenser for dispensing a predetermined measured unit of conductive fluid from a container when the container is tipped, and a device for recording the number of measured units dispensed by the dispenser, said dispenser having a housing including an outlet spout, means including an inlet for entering into said container, and a conduit communicating said inlet and said outlet, said device comprising, a casing mounted on the exterior of the housing of said dispenser, a pair of electrical conductors extending from the casing and disposed in spaced apart disposition within said conduit adjacent said outlet spout to form a gap, whereby whenever said container is tipped fluid is presented over said conductors to provide an electrical path across said gap, and electrical circuit means disposed within said casing and connected across said conductors, said circuit means including a source of electrical energy, and an electrical counting means for counting and recording the number of times the electrical path across said gap occurs and thereby the number of predetermined measured units dispensed by said dispenser.

4,436,224

DISPENSER FOR FLUIDS AND PAPER TOWELS

John McInerny, 25 Central Sq., Grafton, Mass. 01519

Filed Feb. 22, 1982, Ser. No. 351,189

Int. Cl.³ B67D *5/06*; B65H *19/00*

U.S. Cl. 222—183 **14 Claims**

1. Dispenser for fluid and paper towels in which the towels are arranged in a roll having a central bore, the dispenser comprising:

(a) a fluid container comprising:

1. a base portion with an upper horizontal surface,
2. an elongated neck portion which extends vertically from the base portion and is adapted to extend through the bore of a roll of paper towels, so that the roll is supported on said horizontal surface and the top of said elongated neck portion extends above the roll, and
3. an outlet aperture at the top of the elongated neck portion;

(b) a fluid dispensing fixture consisting of a manually operated pump comprising:

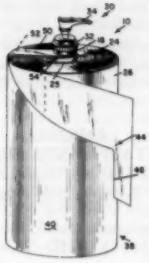
1. a cap adapted to fit on top of the elongated neck portion,
2. a spout on top of the cap, and

3. an elongated tube which is operatively connected to the spout and which extends down into the base portion of the container.

7. Dispenser for fluid and paper towels in which the towels are arranged in a roll having a central bore, the dispenser comprising:

(a) a fluid container having an outlet aperture and comprising:

1. a base portion with an upper horizontal surface,



2. an elongated neck portion which extends vertically from the base portion and is adapted to extend through the bore of a roll of paper towels, so that the roll is supported on said horizontal surface and the top of said elongated neck portion extends above the roll, and

3. an outlet aperture at said base portion,

(b) a fluid dispensing fixture consisting of a spigot at said outlet aperture.

4,436,225

DISPENSER HAVING A TRIGGER-BULB PUMP

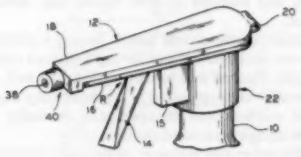
Sidney M. Libit, 441 Lakeside Ter., Glencoe, Ill. 60022

Continuation of Ser. No. 162,429, Jun. 24, 1980, Pat. No. 4,352,443. This application May 17, 1982, Ser. No. 378,805

The portion of the term of this patent subsequent to Oct. 5, 1999, has been disclaimed.

Int. Cl.³ B05B *11/01*

U.S. Cl. 222—207 **5 Claims**



1. A pump for a fluid container comprising: a two part spray head which fits together to form means for dispensing fluid from the container via passages in at least one of said two parts, said head including a fluid-dispensing nozzle; a first of said parts being shaped and proportioned to provide first means for enabling a flow of fluid from near the bottom of the container to the nozzle; second means interposed in said first means for drawing fluid from said container and for delivering it to and expelling it from said nozzle, said second means further including a flexible trigger means having a flange with contours for forming intake and outlet fluid valves and an air breather valve, and said flexible trigger means contours further forming a thin walled bulb which is dependent from said flange and which is positioned to be in direct contact with a finger on the hand of an operator, said finger first closing and then opening said bulb for sucking in said fluid via said first means and said intake valve and then closing said bulb for expelling fluid via said outlet valve and said nozzle, said valves being operated solely by said finger squeezing said bulb.

4,436,226

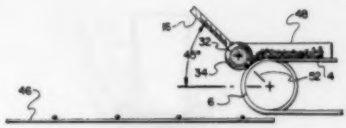
MATERIAL METERING DEVICE

Alvin F. Aggen, 2750 Sailor Ave., Ventura, Calif. 93001

Filed Aug. 6, 1981, Ser. No. 290,419

Int. Cl.³ G01F *11/00*

U.S. Cl. 222—280 **9 Claims**



1. A metering device for particulate material, comprising:

forward and rear rollers for supporting a conveyor belt,

a flexible conveyor belt wound about the rollers,

means for dispensing particulate material onto said conveyor belt,

means for rotating at least one of the rollers to rotate the conveyor belt with its upper surface moving toward the forward roller,

a gate having a lower material contacting surface, said gate comprising a generally cylindrical elongate rod positioned generally above and forward from the forward roller with its axis generally parallel to the roller axis, and a material blocking surface above said rod, said rod cooperting with the forward roller to define a gate opening which prevents material above the level of the lower rod surface from being metered past the gate,

means for adjusting the position of the gate along a path which extends upward and forward from the forward roller to control the volumetric metering rate and permit material being metered past the gate to fall downwardly, and

means for continuously rotating the rod so that its lower surface moves in the direction of material flow, thereby retarding clogging of metered material at the gate.

4,436,227

PUMP AND TAP ASSEMBLY FOR BEVERAGE CONTAINERS

Arthur L. Johnson, Jr., and Marlow W. Dodge, both of Rockford, Ill., assignors to Johnson Enterprises, Inc., Rockford, Ill.

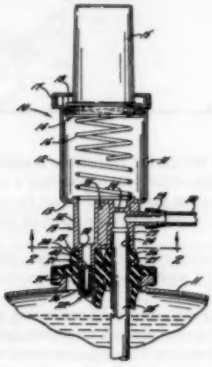
Filed Oct. 1, 1981, Ser. No. 307,535

Int. Cl.³ B67D *5/42*

U.S. Cl. 222—382 **1 Claim**

1. In a pump and tap assembly for a beverage container, the combination of, a single unitary piece of rigid plastic material and comprising, a cylinder having a first end open to receive a hand operated piston, and a tapping unit formed integrally with the second end of said cylinder, said tapping unit including a bottom wall portion formed integrally with said cylinder and closing said second end of the cylinder, a first rigid tube formed integrally with said bottom wall portion and projecting longitudinally outwardly from said bottom wall portion, said tube having an enlarged portion of predetermined length adjacent said bottom wall portion and communicating with the interior of said cylinder while terminating at said bottom wall portion thereby to permit air to be pumped from said cylinder into the container through said tube, the outer end portion of said first tube having an internal diameter of predetermined size, a hollow tubular boss integrally formed on the exterior of said bottom portion and projecting longitudinally from said bottom wall portion alongside said tube a distance equal to said predetermined length, the outer end of said boss having a hole

facing longitudinally outwardly to receive and hold a second rigid tube generally paralleling said first tube, a web integral with and extending across the interior of said boss to separate the interior of the boss from the interior of said cylinder, a tubular fitting formed integrally with said boss and projecting laterally therefrom, said fitting communicating with the interior of said boss and adapted to receive a hose whereby beverage in the container flows out through said second tube, said boss, said fitting and said hose, and a separate and elongated one-way valve made of elastomeric material and disposed in



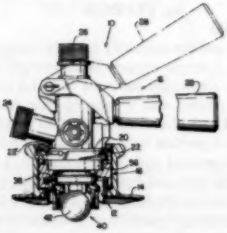
said outer end portion of said first tube, said valve having a generally cylindrical body with a radial flange at its outer end, said body extending longitudinally of said first tube and having a slit which is adjacent its outer end and which opens to permit air to flow only in the direction from said cylinder to the container, the natural diameter of said radial flange of said valve being greater than the internal diameter of said outer end portion of said first tube whereby the flange is compressed against the inside of said first tube to hold the valve in place as said piston moves back and forth in said cylinder.

4,436,228

KEG TAPPING APPARATUS HAVING IMPROVED RETAINER

John A. Frey, Orange, Conn., assignor to Hoff-Stevens, Inc., Ansonia, Conn.

Filed Feb. 16, 1982, Ser. No. 348,961
Int. Cl.³ F16K *35/00*; F16L *37/28*
U.S. Cl. 222—400.7 **3 Claims**



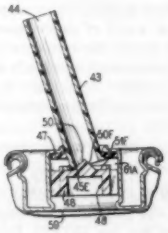
1. In a tapping apparatus for a keg having a neck, the tapping apparatus including a tavern unit and a keg unit, the keg unit including a generally cylindrical retainer for positioning within the neck and having an outwardly opening coaxial bore, said retainer having a plurality of coupling lugs projecting into the bore, the tavern unit having a coupling member received within the bore and coupled to the keg unit by engagement with the coupling lugs, the improvement comprising said retainer having a generally cylindrical body defining said bore and made from one material, said body having an annular bearing surface at its outer end and a plurality of notches therein communicating with said bore, each of said notches extending radially through said body and opening outwardly through said bearing surface, each of said notches having a dovetailed inner end portion converging outwardly toward said bearing surface, a plurality of inserts equal in number to said notches and made from another material harder than said one material, each of said inserts received within and generally complementing an associated one of said notches, each of said inserts defining an associated one of said coupling lugs and a portion of said bearing surface, and means for retaining said inserts in integral assembly with said body.

4,436,229

HIGH FLOW TILT VALVE WITH ACCELERATING CAM EQUIPPED MOVEABLE CUP

Walter C. Beard, South Street, Middlebury, Conn. 06762

Continuation-in-part of Ser. No. 405,696, Aug. 5, 1982, abandoned. This application Oct. 1, 1982, Ser. No. 432,298
Int. Cl.³ B65D *83/14*
U.S. Cl. 222—402.22 **21 Claims**



1. A fluid dispensing valve structure for dispensing the viscous contents of a pressurized container comprising:

a mounting cup member sealingly securable to said pressurized container and having communications with the pressurized contents of said container,

a resilient seal member carried within said mounting cup member,

an elongated tubular nozzle means having a dispensing orifice in one end thereof and having a second opposed and outwardly flanged end extending through said mounting cup member and supported in said mounting cup member by said resilient seal member in a normally generally straight upright extended position,

a moveable valve cup member reciprocally slidably carried within said mounting cup member and normally biasable against said resilient seal member to form a seal means for normally sealing the contents of said container, said moveable valve cup member being engageable with said second end, said contents of said pressurized container being dispensable when said one end is tiltably displaced relative to its generally straight upright extended position by an external deflecting operating force applied thereagainst, thereby opening said seal means, said moveable valve cup member including:

(A) a base portion extending across said second end of said tubular nozzle means,

(B) rib means upstanding from said base portion for engaging said resilient seal member peripherally of said tubular nozzle means,

(C) camming means centrally upstanding from said base portion and slidably engagable with portions of said second end of said tubular nozzle means when said one end is so tiltably displaced, whereby deflection of said

moveable valve cup member occurs when said second end slides along said camming means,

(D) guidance means for orienting said moveable valve cup member relative to said mounting cup member for stable reciprocal sliding movements longitudinally relative to said mounting cup member, and

(E) channel means defined by said moveable valve cup member longitudinally extending therethrough adapted for the laminar flow of a viscous fluid therethrough, the interrelationship between said moveable valve cup member, said tubular nozzle means, said resilient seal member, and said mounting cup member being such that a substantially unobstructed flow of said contents through said valve structure can occur when said one end is so tiltably displaced and also such that when said tubular nozzle means is so tiltably displaced, said second end first exerts said operating force against said base portion and thereafter, as said tiltable displacement increases, said second end next exerts said operating force against said camming means.

4,436,230

ARRANGEMENT FOR PULSATION-FREE FEEDING OF A LIQUID MEDIUM

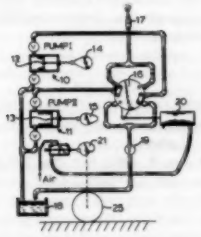
Frank Hofmann, Hamburg, Fed. Rep. of Germany, assignor to Firma Walter Hofmann Maschinenfabrik, Fed. Rep. of Germany

Filed Feb. 26, 1981, Ser. No. 238,336

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1980, 3007116

Int. Cl.³ F04B *21/02, 23/06*

U.S. Cl. 222—614 **9 Claims**



1. An apparatus for pulsation-free feeding of a liquid medium, operable at a certain drive speed, comprising:

a supply container for a liquid medium;

a consuming device;

at least two statically-operated feeding devices, each of which has an inlet end communicating with said supply container and a discharge end, as well as reciprocating displacement means which has a feed stroke for generating a liquid flow out of said discharge end of each feeding device, said feed strokes of said feeding devices overlapping one another and producing equivalent liquid flows; and

switch-over means for successively, simultaneously, and alternately connecting said discharge ends of said feeding devices with said consuming device and with said supply container, respectively, during said feed strokes of said feeding devices.

4,436,231

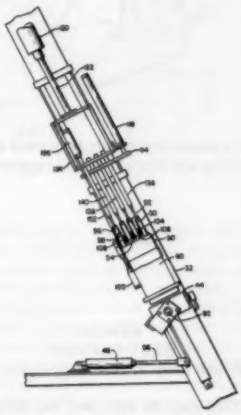
METHOD AND MACHINE FOR PRE-FORMING AND TURNING GLOVES

James C. Kelly, and Charles H. Shurden, both of Starkville, Miss., assignors to Starkville Tool & Die Company, Starkville, Miss.

Filed Nov. 12, 1981, Ser. No. 320,505

Int. Cl.³ A41H *43/00*

U.S. Cl. 223—40 **45 Claims**



1. A method of pre-forming and turning gloves comprising:

(a) placing an unturned glove on five turning tubes having resiliently mounted ends;

(b) mechanically centering the fingers of said glove on said turning tubes by exerting pressure on the glove between said fingers;

(c) pre-forming the glove by stretching the stitches at the tips of the fingers of said glove by mechanically advancing five turning rods into the tops of said fingers and said resiliently mounted ends of said turning tubes while maintaining said pressure between the fingers of said glove wherein the thumb turning rod is mechanically actuated independently of the remaining turning rods;

(d) removing said pressure from between the fingers of said glove;

(e) mechanically removing pressure on said glove by removing said thumb turning rod at a rate of removal independent of the rate of removal of said remaining turning rods; and

(f) mechanically turning in a single operation all the fingers, the thumb, the palm and wrist of said glove.

4,436,232

BRACKET FOR MOTORCYCLE LOCK

Peter L. Zane, S. Easton, and Michael S. Zane, Cambridge, both of Mass., assignors to KBL Corporation, Boston, Mass.

Filed Nov. 16, 1981, Ser. No. 297,240

Int. Cl.³ B62J *11/00*

U.S. Cl. 224—39 **13 Claims**

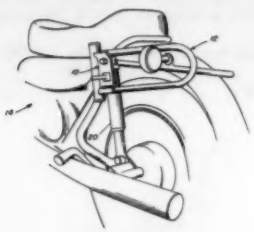
1. A bracket mountable to a support for holding a lock having a U-shaped shackle and a cross-piece adapted to be locked perpendicularly across the legs of said shackle, said bracket comprising

(a) a rigid body portion dimensioned to generally span at least between the legs of said shackle,

(b) said body portion being formed with at least one channel extending along an edge thereof and adapted to receive a leg of said shackle,

(c) clamp means mounted to said body portion and adapted

to engage said cross-piece to prevent movement of said leg along said channel,



(d) mounting means operatively associated with said bracket for mounting said bracket to said support.

4,436,233

BABY CARRIER

James B. Hill, and Sally F. Hill, both of Rte. 2, Galena, Mo. 65656

Filed Dec. 30, 1981, Ser. No. 335,682
Int. Cl.[3] A47D *13/02*
U.S. Cl. 224—159 8 Claims

1. Apparatus for carrying an infant on and by the body of an adult comprising:

a seat means adapted to be located in proximity to the waist, hip and stomach of an adult for conformable supporting engagement with the legs, buttocks and lower back of the infant;

a lower hip strap means attached to a lower portion of said seat means and adapted to be located about the hips of an adult for conformable supporting engagement with the body of the adult;

an upper shoulder strap means attached to an upper portion of said seat means and adapted to be located across the back and over the shoulder and across the chest of the adult for conformable supporting engagement with the body of the adult; and

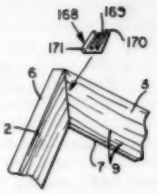
said seat means and said hip strap means and said shoulder strap means being constructed and arranged to form said seat means into a J shape configuration providing a front flap portion connected to and extending downwardly from said waist strap means and located between the infant and the adult and a bottom portion located in the crotch area of the infant and a back portion extending upwardly across the back of the infant and being connected to said shoulder strap means.

4,436,234

FRAME FASTENER

George W. Kennedy, Pompano Beach, Fla., assignor to Senco Southeast, Inc., Decatur, Ga.

Filed Jul. 20, 1981, Ser. No. 284,607
Int. Cl.[3] B27F *7/34*
U.S. Cl. 227—4 9 Claims



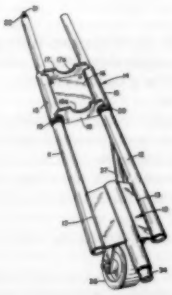
1. In apparatus for fastening mitered joints of a frame comprising a clamp assembly for holding two frame elements in a common plane and in angled abutment with each other to form a mitered joint, means for moving said clamp assembly into clamping engagement with the frame elements, support means for supporting a fastener tool with its fastener discharge opening at a position on one side of the common plane at a location where the mitered joint is to be positioned and at an attitude to discharge a fastener into the mitered joint, the improvement comprising a brace member movable into engagement with the frame elements at the mitered joint clamped by said clamp assembly on the other side of the common plane, said brace member including a foot with a surface movable into engagement with both frame elements at the mitered joint to brace the frame elements in a common plane, a stem connected at one of its ends to said foot, a socket member movably mounted to said stem, and said socket member and stem including means for limiting the movement of said foot and stem with respect to said socket member as the foot engages the frame elements, means for moving said brace member into engagement with the mitered joint, and control means responsive to the movement of the stem and the socket member with respect to each other as the foot engages the frame elements to discharge a fastener from the fastener tool.

4,436,235

PORTABLE PNEUMATIC NAIL DRIVING APPARATUS

Francis A. Hebert, Schriever, La., assignor to South Louisiana Contractors Inc., Lafayette, La.

Filed Jun. 8, 1982, Ser. No. 386,311
Int. Cl.[3] B25C *1/02*
U.S. Cl. 227—111 8 Claims



1. For use with a percussive air hammer having a chisel, a nail driving apparatus comprising:

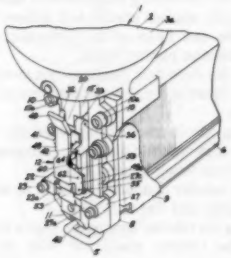
(a) a base member,
(b) guide means upstanding from each side of said base member,
(c) cradle means movable along said guide means,
(d) means carried by said cradle means adapted to mount the air hammer securely to said cradle means,
(e) nail barrel means into which both nails to be driven and the chisel of the air hammer are to be received is positioned on and carried by said base member; and
(f) one of said guide means upstanding from said base member forming a nail chute having means for delivering nails singly to said barrel means.

4,436,236

FRONT GATE AND LATCH ASSEMBLY FOR THE GUIDE BODY OF AN INDUSTRIAL FASTENER DRIVING TOOL

William T. Jobe, Bethel, Ohio, assignor to Senco Products, Inc., Cincinnati, Ohio

Filed Mar. 22, 1982, Ser. No. 360,180
Int. Cl.³ B25L *1/04*
U.S. Cl. 227—123 **10 Claims**



1. A fastener driving tool of the type having a fastener-containing magazine, a reciprocating fastener driver, a guide body communicating with said magazine and having a front opening, and an elongated front gate closing said front opening, said gate being pivotally affixed at one end to said guide body and being swingable between open and closed positions, said gate in closed position and said guide body defining a drive track for said fasteners and said fastener driver, characterized by a latch plate extending transversely of the long axis of said gate and being captively and slidably mounted on said gate, said latch plate having end portions extending laterally to either side of said gate, a spaced pair of locking blocks mounted on said guide body to either side of said front opening, said locking blocks having opposed laterally extending lugs, said latch plate being shiftable along said gate between a gate-locking position near the free end of said gate wherein said latch plate ends are in wedging engagement with said locking block lugs and a gate release position free of said locking block lugs, and a manually actuable over-center lever assembly to shift said latch plate.

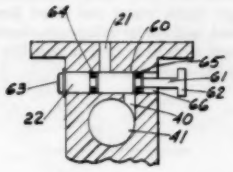
4,436,237

AUTOMATIC FIRING SYSTEM FOR PNEUMATIC TOOLS

George F. Vornberger, and John P. Crutcher, both of Cincinnati, Ohio, assignors to Senco Products, Inc., Cincinnati, Ohio

Filed Nov. 16, 1981, Ser. No. 321,772
Int. Cl.³ B25C *1/04*; F01D *25/06*
U.S. Cl. 227—130 **10 Claims**

1. In a pneumatically actuated fastener applying tool of the type having a tool body adapted to be connected to a supply of air under pressure, a cylinder in said body, a piston and fastener driver reciprocable in said cylinder, a return air chamber in said body, a main valve for supplying air under pressure to said piston for a working stroke, a portion of the underside of said main valve being continuously exposed to air under pressure, a remote valve assembly for actuating said tool, a connection between said remote valve assembly and the upper side of said main valve, said remote valve assembly in the inactive position providing a connection between said air under pressure and the upper side of said main valve, said upper side of said main valve having a greater area than its underside, a connection between said return air chamber and said remote valve assembly, and a selector valve in said last named connection, the improvement wherein said remote valve assembly comprises a



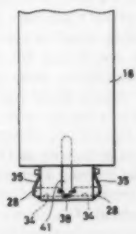
one-piece movable core shiftable between an idle position and an active position, said selector valve in one position venting said air under pressure from above said main valve through said remote valve assembly and selector valve to atmosphere to provide a working stroke upon each actuation of said remote valve assembly, said selector valve in another position providing a connection between said return air chamber through said selector valve and remote valve assembly directly to the upper side of said main valve to provide for auto-fire operation of said tool as long as said remote valve assembly is in said active position.

4,436,238

APPARATUS FOR ATTACHING FASTENER ELEMENTS ONTO A GARMENT

Fumio Seki, Toyama, Japan, assignor to Yoshida Kogyo K K, Tokyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,610
Claims priority, application Japan, Dec. 13, 1979, 54-172896[U]
Int. Cl.³ A41H *37/04, 37/16*
U.S. Cl. 227—149 **1 Claim**



1. An apparatus for attaching a pair of fastener elements onto a garment, comprising:
(a) a frame having a table and a bored head;
(b) a stationary die mounted on said table in opposite relation to said bored head;
(c) a plunger reciprocable mounted in said bored head for movement along a path toward and away from said die having a plunger head supporting a punch for coaction with said die to attach the pair of fastener elements onto the garment from opposite sides thereof;
(d) first means on said bored head for releasably holding one of the fastener elements in said path in front of said punch,

said first means being adapted to be actuated by said punch for releasing said one fastener element, and including a substantially hollow cylindrical holder slidably mounted in said bored head in front of said plunger;

(e) second means on said die for releasably holding the other fastener element in said path in front of said die, said second means being responsive to coaction with said holder for releasing the other fastener element; and

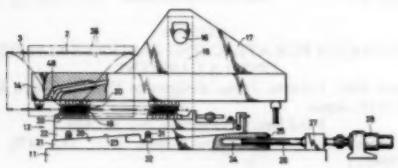
(f) third means acting between said plunger head and said holder for frictionally retaining said holder on said third means so as to enable said holder to move along with said plunger head, said third means comprising a split bush made of an elastic metal and fitted loosely over said plunger head, said holder being compressively fitted over said split bush so as to be held on said split bush under the resilience of said split bush.

4,436,239

METHOD AND APPARATUS FOR MANUFACTURING SPIRAL PIPE

Yoshito Tsuyama, Kitakyushu; Yasumi Shimazaki, Munakata; Kazutoshi Kakita, Kitakyushu, and Toshio Hirokawa, Kimitsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 29, 1981, Ser. No. 258,555
Int. Cl.³ B23K 31/06
U.S. Cl. 228—17 11 Claims



7. A spiral pipe manufacturing apparatus which comprises: a forming apparatus having three forming roll means disposed at the apexes of a triangle and positioned along the circumference of the pipe being manufactured for continuously bending a flat strip into spiral form, one of said roll means being an internal forming roll for contacting the inner surface of the strip and pressing toward the outside of the pipe and the other two of said forming roll means being outer rolls and respectively being ahead of and behind said internal forming roll in the direction of movement of the strip and for contacting the outer surface of the strip and pressing it toward the inside of the pipe, a welding apparatus provided behind said forming apparatus in the direction of movement of the strip and along the circumference of the pipe being manufactured for continuously welding the seam of the spirally formed strip, a plurality of holding rolls positioned along the path of movement of the strip behind said forming apparatus for engaging one side of the strip for holding the strip in a shape equal to the desired diameter of the pipe, and a bending moment imparting roll means adjacent to and behind the forming apparatus in the direction of movement of the strip and ahead of the first of said holding rolls and on the opposite side of the strip from said holding rolls and adjustably movable in the direction of the pipe diameter for engaging the strip for holding it in a position as it moves past said bending moment imparting roll means for making the diameter of the spirally bent strip equal to the desired diameter of the finished pipe.

4,436,240

METHOD FOR PLATING DIELECTRIC ELEMENTS IN AN ISOLATOR AND FOR ASSEMBLING THE ISOLATOR

Jay H. Feinberg, Deerfield, and Terrance Knowles, Lincolnshire, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Apr. 5, 1982, Ser. No. 365,423
Int. Cl.³ C23C 3/02
U.S. Cl. 228—122 2 Claims

1. For an isolator comprising a hollow, cylindrical ferrite bead sandwiched between a pair of hollow, cylindrical dielectric elements having metal plated inner and outer circumferences and non-plated inner and outer circumferences, a method for plating the end faces and for assembling the isolator within a hollow connector shell, comprising:

sensitizing and activating the dielectric elements such that a subsequently applied plating will adhere thereto;

covering the end faces of the dielectric elements with a non-conductive plating resist;

immersing the dielectric elements in a metal plating bath to plate the inner and outer circumferences of the dielectric elements;

sandwiching the ferrite bead between the plated dielectric elements such that the dielectric elements abut the ferrite bead without being bonded thereto;

providing a tubular conductor sized to fit within said dielectric elements and ferrite bead;

surrounding the tubular conductor with a thin solder sheath;

inserting the tubular conductor with the solder sheath thereon into the assembled dielectric elements and ferrite bead;

surrounding the assembled dielectric elements and ferrite bead with a second thin solder sheath;

inserting the assembled dielectric elements and ferrite bead with the second solder sheath thereon into the connector shell; and

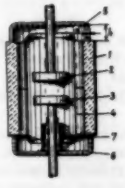
heating the entire structure so as to solder the tubular conductor to the plated inner circumferences of the dielectric elements and to solder the connector shell to the plated outer circumferences of the dielectric elements.

4,436,241

METAL-CERAMIC JOINT

Joseph H. F. G. Lipperts, Hengelo, Netherlands, assignor to Hazemeijer B.V., Hengelo, Netherlands

Continuation of Ser. No. 126,286, Mar. 3, 1980, abandoned. This application Jun. 14, 1982, Ser. No. 388,438
Claims priority, application Netherlands, Mar. 5, 1979, 7901740
Int. Cl.³ B23K 1/04; C04B 37/02
U.S. Cl. 228—124 7 Claims



1. A method for producing a vacuum-tight butt brazing joint

between a metallized ceramic part and a stainless steel part, said method comprising the steps of

(a) shaping the end portion of the stainless steel part to be joined with the metallized ceramic part such that it has a height of from about 4 mm to about 12 mm and a maximum thickness along this height of 0.8 mm,

(b) annealing at least said shaped end portion of said stainless steel part, and

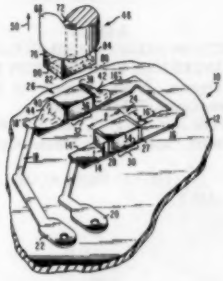
(c) brazing said annealed and shaped end portion of said stainless steel part directly to said metallized ceramic part.

4,436,242

DESOLDERING TOOL AND METHOD OF DESOLDERING LEADLESS COMPONENTS

Robert W. Shisler, Noblesville, and Ronald E. McVety, Indianapolis, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 15, 1981, Ser. No. 331,088
Int. Cl.³ B23K *3/02*; H05K *13/00*
U.S. Cl. 228—264 **15 Claims**



13. A leadless component desoldering tool tip comprising:

a shaft having an end face;

a rod-like member having first and second faces at its respective opposite ends, said member being heat conductively and mechanically fixed at its first face to said end face of said shaft; and

a rectangular member attached to said second face of said member, the rectangular member comprising side walls which define a recess of given shape, and having also a planar base normal to said side walls defining the base of said recess, said side walls being discontinuous to permit the insertion in the discontinuity of a tool for removing from the recess a component that may be present therein.

15. A method of removing a leadless component from a printed circuit board comprising:

coating the recess of a recessed desoldering tip with solder;

heating said tip and solder until the solder is molten;

applying the tip to said component to provide sufficiently close engagement between said molten solder and component to create molecular attraction forces therebetween and sufficient heat transfer from said tip to said component to loosen said component from said board; and

displacing said tip relative to said printed circuit board to remove said loosened component from said board.

4,436,243

STORAGE FILE FOR SLIDES AND TISSUE BLOCKS

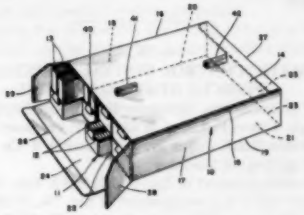
Frederic L. Nason, Van Nuys, and Walton B. Crane, Sherman Oaks, both of Calif., assignors to Medical Packaging Corporation, Santa Monica, Calif.

Filed Sep. 27, 1982, Ser. No. 424,028
Int. Cl.³ B65D *5/48*
U.S. Cl. 229—27 **3 Claims**

1. A storage file for slides and tissue blocks including, in combination:

(a) a box stamping comprising initially a flat sheet having fold lines defining a top, left and right sides, a bottom and front and rear ends for folding into a box;

(b) means having fold lines defining a central partition in said box including an extended portion of said box stamping, said extended portion when folded to form the partition defining front and rear tabs, the central area of the top having front and rear slots for receiving said tabs, and the central area of said bottom having front and rear slots for receiving the protruding tabs from the top of another box



to enable indexing of several of the boxes in a vertical stack; and

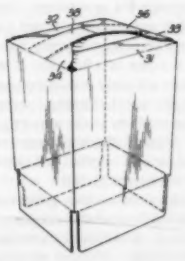
(c) a tray stamping comprising initially a flat sheet having fold lines defining a floor, left and right sides, and front and rear ends for folding into a tray receivable in said box whereby a storage file for slides and tissue blocks can be economically formed from said box, partition and tray stampings, and whereby said stampings in their initial flat configuration can be compactly stored and shipped.

4,436,244

CARTON BLANK WITH INTEGRAL HANDLE

Charles K. Morris, 529 Smiths Rd., Templestowe, Victoria, 3081, Australia

Continuation-in-part of Ser. No. 232,046, Jan. 23, 1981, abandoned. This application Jul. 2, 1982, Ser. No. 394,941
Int. Cl.³ B65D *5/46*
U.S. Cl. 229—52 B **6 Claims**



1. A carton blank for forming a carton of square or rectangular cross-section therefrom, wherein said carton blank is adapted to be folded and joined to form a carton which is provided at one end with two pairs of opposed integral flaps, the first of said pairs of flaps being adapted to overlap and close off said carton end when folded thereover, the second of said opposed pairs of flaps each reducing in width from its connection with the carton end to form narrow extended portions, whereby said narrow extended portions may be joined when said second opposed pair of flaps is folded flat over the carton end to form a composite handle member which lies generally flat over the carton end, covering and generally following the direction of a line joining the sides of the carton end to which said second opposed pair of flaps are attached and bisecting

said carton end, said composite handle member having a carry handle portion opposite ends of which join the broader sections of said second opposed pair of flaps, said carry handle portion having a width substantially less than the edges of the carton end to which said second opposed pair of flaps are attached, one flap of said first pair of opposed integral flaps including an integral strip with means for facilitating severing of said strip therefrom, said one flap being dimensioned so that said strip underlies said carry handle portion when said first and second pairs of opposed flaps are folded down over said carton end.

4,436,245

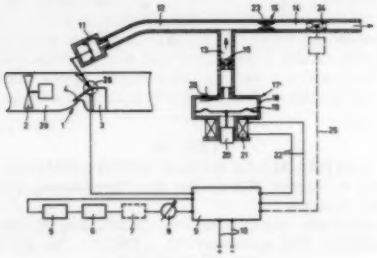
PNEUMATIC CONTROL SYSTEM, ESPECIALLY FOR VEHICLE HEATING SYSTEMS

Manfred Nonnenmann, Schwieberdingen, and Steffi Deuschle, Fellbach, both of Fed. Rep. of Germany, assignors to Süddeutsche Kühlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 235,662, Feb. 18, 1981, abandoned, which is a continuation of Ser. No. 87,984, Oct. 25, 1979, abandoned. This application Apr. 28, 1982, Ser. No. 372,545

Int. Cl.³ F24F *13/10*

U.S. Cl. 236—49 **10 Claims**



1. In a temperature control apparatus including at least one temperature sensor means for generating a temperature signal, a controller means for generating a pump control signal as a function of said temperature signal, pump means for generating a fluid pressure in a conduit as a function of said pump control signal, and at least one actuator means connected to said conduit for positioning a control element located to control the flow of heat-carrying medium in the apparatus as a function of the pressure in said conduit, the improvement comprising:

a restriction means in said conduit for continuously venting said conduit to atmosphere; and

said controller means continuously generating pump control signals to continuously operate said pump means, once the system is powered, at selected capacities to maintain a pressure in said conduit sufficient to operate said actuator means to position said control element to a desired position with said restriction means continuously venting said conduit.

4,436,246

TRACTION DEVICES

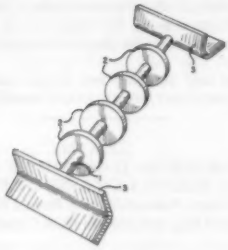
David S. Goldsmith, 420 Park Ave., Highland Park, Ill. 60035

Filed Aug. 3, 1979, Ser. No. 35,920

Int. Cl.³ E01B *23/00*

U.S. Cl. 238—14 **1 Claim**

1. A traction device to serve as a traction base for a drive wheel of an automotive vehicle, comprising in combination, a length of ferrous metal straight stock, ferrous metal washers situated at points along the length of said straight stock in surrounding relation thereto, a section of ferrous metal angle stock, said straight stock intersecting with said angle stock generally at the center of said angle stock and at right angles



thereto, said straight stock, angled stock, and washers being welded together so as to constitute a unitized whole.

4,436,247

FUEL INJECTION NOZZLE AND HOLDER ASSEMBLY FOR INTERNAL COMBUSTION ENGINES

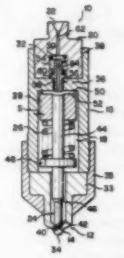
Jiro Akagi, Oyama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Apr. 13, 1982, Ser. No. 367,985

Claims priority, application Japan, Oct. 29, 1981, 56-160228[U]

Int. Cl.³ F02M *61/08*

U.S. Cl. 239—533.7 **6 Claims**



1. A device for the injection of fuel under pressure into a combustion chamber of an internal combustion engine, comprising:

(a) a body having formed therein a fuel inlet for admitting pressurized fuel, a storage chamber for receiving the incoming pressurized fuel, and a spray orifice for discharging in the form of droplets the pressurized fuel from the storage chamber

(b) a first spring within the body;

(c) a needle valve, including a stem, within the body for covering and uncovering the spray orifice, the needle valve being normally held in a position to cover the spray orifice under the bias of the first spring and adapted to be acted upon by the pressurized fuel in the storage chamber for uncovering the spray orifice against the bias of the first spring;

(d) a check valve slidably fitted over the stem of the needle valve and acted upon by the first spring for blocking communication between the fuel inlet and the storage chamber upon admission of each required amount of pressurized fuel into the storage chamber;

(e) a second spring within the body;

(f) a yieldable abutment disposed opposite to an end of the needle valve, the abutment being biased by the second

spring toward the needle valve and normally retained a prescribed distance away therefrom; and

(g) whereby the needle valve is unseated to uncover the spray orifice only against the force of the first spring when the fuel introduced into the storage chamber is at relatively low pressure, and against the resultant of the forces of the first and the second springs when the fuel in the storage chamber is at higher pressure.

4,436,248

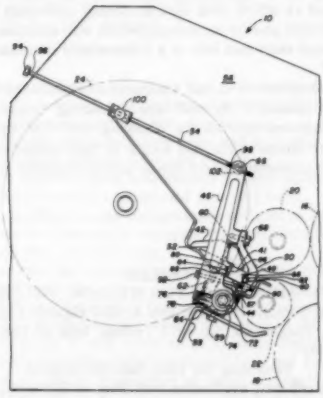
ADJUSTABLE SHEARBAR APPARATUS

Curtis H. Lindblom, New Holland; H. Nevin Lausch, Denver, and Edward H. Priepke, Lancaster, all of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Feb. 1, 1982, Ser. No. 344,654

Int. Cl.³ B02C *18/16*

U.S. Cl. 241—101.7 **5 Claims**



1. In a forage harvester, adjustable shearbar apparatus comprising,

spaced opposing side sheets,

an elongated shearbar having opposing sides,

lower support means for supporting the shearbar, said lower support means being an elongated support member extending between and connected to said side sheets and extending substantially along the length of said shearbar,

upper support means connected to said side sheets for urging said shearbar against said lower support means adjacent opposite ends of said shearbar,

a pair of levers pivotally connected to said lower support means, said levers each having first and second portions disposed on said opposing sides of said shearbar,

means for securely clamping said first and second portions against said opposing sides of said shearbar, and

means for pivoting said levers and moving said shearbar linearly relative to said lower support means, said means for pivoting including adjustment members coupled directly to said levers.

4,436,249

WINDING SYSTEM

Jack Santa Lucia, N. Haledon, and Kenneth Trapp, West New York, both of N.J., assignors to Independent Maching Company, Paterson, N.J.

Filed Feb. 1, 1982, Ser. No. 344,807

Int. Cl.³ B65H *54/02, 54/40, 54/54*

U.S. Cl. 242—18 R **3 Claims**

1. A winding system including:

frame means;

power driven shaft means mounted on said frame means;

a work fluid source for providing work fluid at a selected variable pressure;

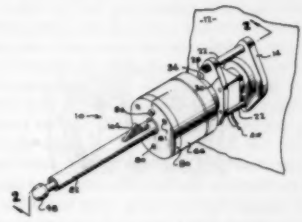
a mandrel carrier block mounted for rotation;

mandrel means mounted on said mandrel carrier block for rotation therewith and including wound material support means for receiving material being wound;

work fluid controlled drive coupling means connected to said work fluid source for providing a selectively determined variable maximum drive torque to the carrier block from the power driven shaft means in accordance with the pressure of work fluid from said work fluid source; and

wherein said mandrel means comprises;

a coupling disc removably connected to a side of said driven mandrel carrier block for coaxial rotation therewith;



a hollow mandrel sleeve extending outwardly in cantilever manner with respect to said coupling disc;

pivotal latch means mounted to extend outwardly of said mandrel sleeve for engaging a latch surface of spool means axially positionable over said mandrel sleeve;

ejector shaft means mounted in said mandrel sleeve for axial reciprocation between an outer latch portion and an inner latch release position in which a portion of said ejector shaft engages said latch member to pivot said latch member downwardly out of latching position to permit the removal of a spool from said mandrel sleeve; and

manually operable handle means on an outer end of said ejector shaft for axially moving said ejector shaft.

4,436,250

DRIVE UNIT FOR A TRANSPORT CABLE

Herbert Becker, Coburg, Fed. Rep. of Germany, assignor to Metallwerk Max Brose GmbH & Co., Coburg, Fed. Rep. of Germany

Filed Jul. 24, 1981, Ser. No. 286,560

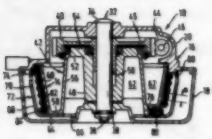
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1980, 8022252[U]

Int. Cl.³ B65H *75/44, 75/48*

U.S. Cl. 242—54 R **14 Claims**

1. Drive unit for winding and unwinding a transport cable, such as for use with a safety belt employed in a motor vehicle in moving the safety belt between the engaged and released conditions, comprising a housing, a motor-driven take-up roll mounted within said housing, said take-up roll having an annular surface on which said transport cable can be wound around a winding axis with said annular surface encircling and facing radially outwardly from the winding axis so that the annular surface extends circumferentially and in the axial direction of the winding axis, a casing spaced radially outwardly from and enclosing said annular surface and having a radially inwardly circumferentially extending surface facing toward said radially outwardly facing annular surface, said radially outwardly facing annular surface having a first end and a second end spaced apart in the axial direction of said winding axis, said transport cable is secured at the first end of said radially outwardly facing surface to said take-up roll, said housing having an opening through which said transport cable extends out of said housing with said opening spaced in the axial direction of the winding axis from the first end of said radially outwardly facing annular surface and being closer to the second end

thereof, said transport cable contacts said radially outwardly facing annular surface of said take-up roll when said cable is wound into said housing and contacts said radially inwardly facing surface of said casing when said cable in unwound out of said housing, said radially inwardly facing surface is frustoconical for at least a portion of its dimension extending in the axial direction of the winding axis with the smaller diameter end of said radially inwardly facing surface located opposite the first end of said radially outwardly facing annular surface and the larger diameter end spaced axially therefrom toward the second end of said annular surface, said housing having a cable guide surface thereon facing into the space between said



radially inwardly and radially outwardly facing surfaces, said radially inwardly facing surface having the larger diameter end thereof merging into said cable guide surface, said radially inwardly facing surface having a surface part adjacent to and spaced in the axial direction of said winding axis from said cable guide surface with said surface part extending transversely of the axial direction of and circumferentially relative to said winding axis and said surface part projecting radially inwardly toward said radially outwardly facing annular surface from said radially inwardly facing surface extending between said surface part and the larger diameter end of said radially inwardly facing surface.

4,436,251

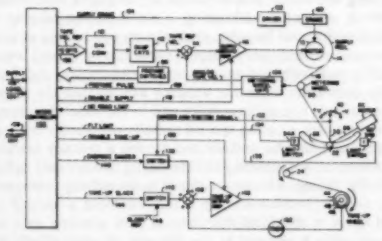
TAPE WINDING SYSTEM

Joseph P. Deyesso, Walpole, Mass.; David Sarser, Northport, N.Y., and Richard G. Berube, Marlboro, Mass., assignors to King Instrument Corporation, Westboro, Mass.

Filed Aug. 6, 1981, Ser. No. 290,417

Int. Cl.³ B65H *59/38, 77/00;* **H02P** *5/46*

U.S. Cl. 242—56 R **14 Claims**



1. Apparatus for winding tape onto a hub, said apparatus comprising, in combination:

first drive means for feeding from a supply of said tape a preselected, programmable amount of said tape at a speed which is variable in accordance with a predetermined function; said first drive means comprising tape measuring means for measuring the length of tape fed by said first drive means and means for comparing said length of said tape with said preselected amount;

second drive means for driving said hub so as to wind tape fed by said first drive means onto said hub; and

tension monitoring means for maintaining at a predetermined level substantially constant tension on said tape as said tape is fed by said first drive means and wound onto said hub said second drive means, said tension monitoring means including (1) a pivotally mounted dancer arm for supporting the tape as said tape is fed by said first drive means and wound onto said hub by said second drive means, said dancer arm being mounted so that its pivotal position varies with the tension on said tape, and (2) means for adjusting said second drive means responsively to changes in the position of said dancer arm so as to vary the speed at which said tape is wound onto said hub in a direction and by an amount which will maintain the tape wound onto said hub at a substantially constant tension; and

means responsive to said comparison between the length of tape measured by said tape measuring means and said preselected amount for disabling said first and second drive means when said length of tape measured by said tape measuring means equals said preselected amount.

4,436,252

TENSION SHAFT FOR WINDING FRAMES

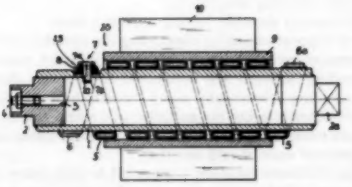
Wolfgang Bürkle, Zum Bohrturm 3, 3250 Hameln 1, and Dieter Opitz, Ringstrasse 32, 8671 Forbau, both of Fed. Rep. of Germany

Filed Aug. 26, 1982, Ser. No. 411,788

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1981, 8125169[U]

Int. Cl.³ B23B *31/40, 5/22;* **B65H** *75/18*

U.S. Cl. 242—72 B **13 Claims**



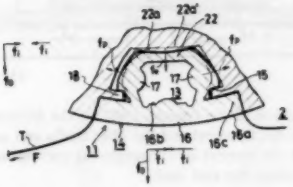
1. In a tension shaft for a winding machine including a central shaft piece for winding widths of sheet material thereon with a flexible tube wound about the outside of the central shaft piece, the outside diameter of the central shaft piece being variable by inflating or deflating the flexible tube, a valve for feeding or discharging air into the interior of the central shaft piece and an air inlet to the tube for coupling the interior of the central shaft piece with the interior of the flexible tube, the improvement which comprises an air inlet to the tube comprising a screw having a shaft and a screw head, an axial opening extending from the end of the screw shaft along the screw shaft, at least one radial hole emanating from the axial opening to the exterior of the screw shaft, an intermediate piece disposed within the tube, the intermediate piece adapted to receive the screw shaft and formed with at least one radial hole for cooperating with the radial hole in the screw shaft, the intermediate piece clamped to the interior surfaces of the flexible tube disposed opposite thereto by the screw head.

4,436,253

DEVICE FOR CLAMPING ONE TERMINAL END OF A TAPE IN A TAPE REEL

Koji Watanabe, Fujisawa, Japan, assignor to NIFCO, Inc., Yokohama, Japan

Filed Nov. 16, 1981, Ser. No. 322,009
Claims priority, application Japan, Nov. 26, 1980, 55-168233[U]
Int. Cl.³ B65H 75/28
U.S. Cl. 242—74.1 8 Claims



1. The combination of a tape reel hub and a device for clamping the terminal end portion of a tape within a recess defined within said tape reel hub, comprising:

first fastening means mounted upon said tape reel hub;

a base member defined upon said device;

a pair of legs extending substantially radially inwardly from said base member toward said tape reel hub;

second fastening means defined upon said pair of legs of said device for operatively engaging said first fastening means of said tape reel hub; and

a bridge member connecting the radially inner ends of said pair of legs,

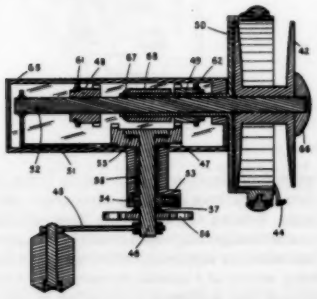
the radial distance defined between said device base member and said bridge member being greater than the effective radial depth of said recess so as to cause circumferential expansion of said clamping device legs and said second fastening means, in response to radial contraction of said clamping device as a result of engagement between said clamping device bridge member and the radially inner portion of said hub defining said recess as said clamping device is radially inserted into said tape reel hub recess, whereby said second fastening means of said device operatively engage said first fastening means of said hub.

4,436,254

SPINNING REEL FOR FLY-FISHING

Carl N. Normann, 2332 Barcelona Way, Sacramento, Calif. 95825

Filed Apr. 9, 1982, Ser. No. 367,096
Int. Cl.³ A01K 89/01
U.S. Cl. 242—84.21 R 1 Claim



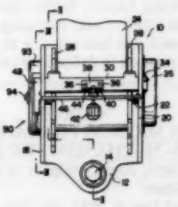
1. A fishing reel comprising a gear casing, crank means carried by the gear casing, hollow bail means open at both ends, means rotatably mounting the bail means on said gear casing, spool means, means rotatably and reciprocally mounting the spool means concentrically in said bail means with the spool means suitably projecting from both ends thereof for reciprocation and rotation of said spool means within said bail means and for rotation of said bail means about said spool means, spool gear means, means reciprocally mounting the spool gear means on said spool means for possible engagement with said crank means, bail gear means, means reciprocally mounting the bail gear means on said bail means for possible engagement with said crank means, spool stop means, means mounting the spool stop means on said gear casing for possible engagement with said spool gear means, bail stop means, means mounting the bail stop means on said gear casing for possible engagement with said bail gear means, drive selector means, means rotatably mounting one end of the drive selector means on said spool gear means and the other end on said bail gear means, means reciprocally mounting said drive selector means on said gear casing with portion of former suitably projecting through a side wall of latter; said drive selector means having first and second reciprocal positions relative to said gear casing, respectively closer to and farther from said bail means; whenever said drive selector means is in said first position, said bail gear means is engaged with and held stationary by said bail stop means while said spool gear means is engaged with said crank means, to be rotated by said crank means in predetermined direction, with said spool means, when said crank means is rotated in conventional direction; and whenever said drive selector means is in said second position, said spool gear means is engaged with and held rotationally stationary by said spool stop means while said bail gear means is engaged with said crank means, to be rotated by said crank means opposite to said predetermined direction, with said bail means, when said crank means is rotated in conventional direction.

4,436,255

SEATBELT RETRACTOR

Kenji Matsui, Higashikamo, and Fuminori Teraoka, Nishikamo, both of Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Jan. 15, 1982, Ser. No. 339,707
Claims priority, application Japan, Jan. 20, 1981, 56-7152[U]
Int. Cl.³ A62B 35/02; B65H 75/48
U.S. Cl. 242—107.4 A 14 Claims



1. A seatbelt retractor for retracting a passenger retraining seatbelt, comprising:

a takeup shaft around which the seatbelt is wound by a biasing force;

locking means for stopping the belt-unwinding rotation of said takeup shaft;

acceleration sensing means for sensing a vehicular emergency situation and operating said locking means; and

cam means responsive to unwinding of the seatbelt more than a predetermined value from said takeup shaft for operating said locking means to stop belt unwinding rotation of said takeup shaft.

4,436,256

REEL SHAFT/REEL HUB FITTING APPARATUS

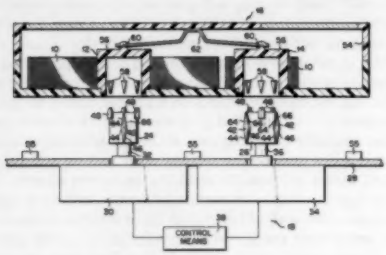
Sinichi Saitou, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 19, 1981, Ser. No. 265,416

Claims priority, application Japan, Jun. 4, 1980, 55-77523[U]; Jun. 4, 1980, 55-77525[U]

Int. Cl.³ G03B *1/04*; G11B *15/32, 23/04*

U.S. Cl. 242—200 **12 Claims**



1. A reel shaft/reel hub fitting apparatus for fitting a reel hub of a tape cassette on a reel shaft of a magnetic recording tape running apparatus, said reel shaft/reel hub fitting apparatus comprising:

at least one engaging projection mounting on the outer circumferential surface of said reel shaft and having two side faces which edge away from each other along the circumferential direction as said side faces extend in the direction in which said reel shaft is fitted in said reel hub;

locating means disposed on said reel hub and engaging said reel shaft along the axis of rotation thereof when said reel hub is fitted on said reel shaft, thereby defining the position of said reel hub relative to said reel shaft along said axis of rotation;

said locating means comprising a wall inwardly projecting from said reel hub in the radial direction thereof;

said reel shaft being provided with a plurality of protrusions projecting along said axis of rotation of said reel shaft so as to abut against said inwardly projecting wall of said reel hub; and at least one engaged projection formed on the inner circumferential surface of said reel hub and adapted to engage at least one of said side faces of an engaging projection of said reel shaft, said at least one engaging projection being located within the locus of rotation of said two side faces of said engaging projection when the position of said reel hub relative to said reel shaft along said axis of rotation is defined by said locating means.

4,436,257

REEL DRIVING METHOD FOR TAPE RECORDER AND A DRIVING MECHANISM FOR ITS PRACTICE

Akira Osanai, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1981, Ser. No. 329,031

Claims priority, application Japan, Dec. 15, 1980, 55-176876

Int. Cl.³ G03B *1/04*; G11B *15/32*

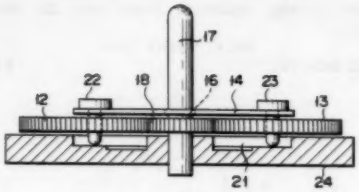
U.S. Cl. 242—201 **6 Claims**

2. A reel driving mechanism for a tape recorder including a pair of reel shafts and a capstan shaft which can be reversed in rotation, comprising:

a flywheel fixed coaxially to the capstan shaft,

a rockable support lever arranged over the flywheel for rocking movement about a rocking center of the support lever, and

a pair of idlers provided on the support lever on both sides of the rocking center of the support lever and engaging the capstan shaft to be driven by the capstan shaft, wherein each of the idlers is arranged to selectively engage a corresponding one of said reel shafts, each of the idlers including an idler shaft having a lower end or side face arranged for frictional contact with the flywheel, so that the support lever rocks correspondingly to the rotating direction of the capstan shaft by the frictional force between the flywheel and the idler shafts and one of the idlers on the support lever engages the corresponding reel shaft to drive the reel shaft.



4,436,258

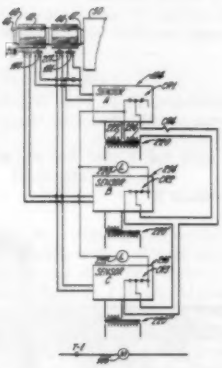
METHOD OF AND APPARATUS FOR SIMULTANEOUSLY PACKAGING LINEAR BUNDLES OF FILAMENTS INTO INDIVIDUAL PACKAGES

Robert R. Jackson, Toledo, and Jerome P. Klink, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 29, 1982, Ser. No. 373,087

Int. Cl.³ B65H *54/02, 54/20*

U.S. Cl. 242—18 G **9 Claims**



1. The method of simultaneously winding linear elements into more than one package including advancing a plurality of linear elements, forming the advancing linear elements into more than one wound package each rotated at the same angular speed, intermittently supplying indications of the size of the packages being wound at a normal increase in the sizes of the several packages, and indicating a deviation in said normal increase in size of any of the packages when any of the packages have a predetermined lesser size than the largest package.

4,436,259

APPARATUS FOR THE CONTROLLED ADVANCE AND RETRACTION OF A FLEXIBLE PAY-OUT CONNECTION FIXED TO A SATELLITE BODY

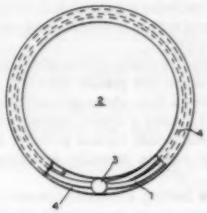
Günther Schmidt, Immenstaad, and Carl-Christian Etzler, Friedrichshafen, both of Fed. Rep. of Germany, assignors to Dornier System GmbH, Fed. Rep. of Germany

Filed Jul. 28, 1981, Ser. No. 287,805

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1980, 3038095

Int. Cl.³ B64G 1/38

U.S. Cl. 244—3.1 5 Claims



1. In an apparatus comprising a spin-imparted satellite body having a pay-out cable fixed thereto with a pay-out means mounted on said pay-out cable,

the improvement which comprises at least one groove means at the periphery of the satellite body to receive the pay-out cable, and at least one elastic holding means to hold the pay-out cable at the groove opening.

4,436,260

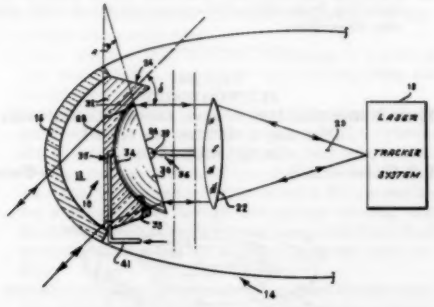
OPTICAL SCANNER FOR USE IN CONFINED AREAS

Edward J. Donelan, Andover, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 21, 1981, Ser. No. 332,785

Int. Cl.³ F41G 7/22; G02B 27/17

U.S. Cl. 244—3.16 15 Claims



11. In an elongated, slender missile having a laser tracker system for emitting a beam of optical energy of preselected wavelength, a nose cone, a window within said nose cone transparent to said preselected wavelength, the improvement therein being in the form of an optical scanner positioned adjacent said window and optically aligned between said laser tracker system and said window, said optical scanner comprising:

a movable prism assembly, said movable prism assembly including a first optical component having a flat surface on one side thereof and a spherically-shaped convex portion adjacent said flat surface, and a second optical component having a flat surface on one side thereof and a spherically-shaped concave portion therein sized to receive said spherically-shaped convex portion of said first optical component therein, both said optical components having the same index of refaction;

said first optical component and said second optical component being mounted with respect to one another for relative movement therebetween;

means interposed between said first optical component and said second optical component for allowing said movement to take place, said means for allowing movement between said optical components being in the form of an air bearing; and

means operably connected to at least said first of said optical components for moving said first optical component with respect to said second optical component;

whereby said beam of optical energy directed toward said flat surface of said first optical component exits said flat surface of said second optical component as said first and second optical components move with respect to one another.

4,436,261

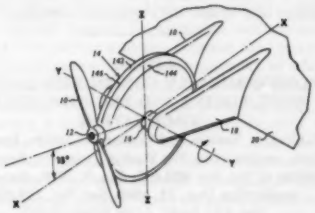
V/STOL AIRCRAFT

Kolio Koleff, 1440 County Line Rd., Alden, N.Y. 14004

Continuation of Ser. No. 142,914, Apr. 23, 1980, abandoned. This application Dec. 7, 1981, Ser. No. 328,250

Int. Cl.³ B64C 15/00

U.S. Cl. 244—51 9 Claims



1. A V/STOL heavier than air aircraft, including:

an aircraft body;

a thrust producing member;

means for mounting said member exteriorly of said body in spaced relation thereto and constraining said member for pivotal movement, with respect to said body, about a single axis;

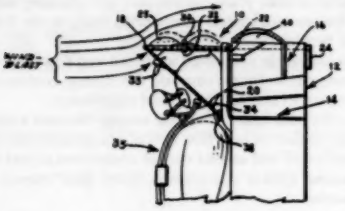
an exterior rigid housing spaced from said body and fixed for movement with said thrust producing member, said housing formed substantially in the shape of two smooth based dishes substantially in the shape of two partial circular conoids having their bases in abutting engagement, the outer surface of each of said conoids being maxially spaced from said axis at its respective geometric center and being progressively and gradually spaced closer and closer to said axis from a surface thereof that is at least adjacent said geometric center to the radial extremity thereof to provide a closed hollow chamber therebetween and being completely symmetrical about all lines which intersect said axis and which are contained within the plane of movement of said exterior housing in all pivotal positions thereof.

4,436,262

WINDBLAST HEAD PROTECTOR FOR USE DURING PILOT EJECTION FROM AN AIRCRAFT

Robert J. Cummings, Hermosa Beach, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 22, 1982, Ser. No. 370,693
Int. Cl.³ B64D *25/04*
U.S. Cl. 244—122 AG **9 Claims**



1. A windblast head protector for use with an ejection seat of an aircraft comprising:

a tubular frame, said frame having a canopy thereon and means slidably connected to said frame for supporting said frame on top of a helmet of a crew member positioned within said ejection seat when said head protector is in a fully deployed condition;

means connected between said frame and said ejection seat for providing support for said frame and for contacting the sides of said helmet when said head protector is in said fully deployed condition; and

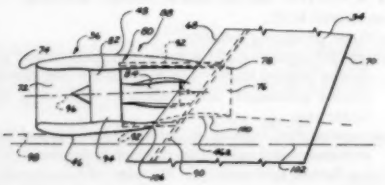
means operably connected to said frame for securely positioning said frame against said ejection seat in said fully deployed condition and for moving said frame from a stowed position within a pilot chute compartment of said ejection seat to said fully deployed condition.

4,436,263

AERODYNAMICALLY CONTOURED, LOW DRAG WING, ENGINE AND ENGINE NACELLE COMBINATION

Louis B. Gratzer, Seattle, and Walter B. Gillette, Issaquah, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 000,698, Jan. 3, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 218,829
Int. Cl.³ B64C *1/38*; B64D *29/02*
U.S. Cl. 244—130 **14 Claims**



1. In an aircraft having a longitudinal axis and designed for flight at a predetermined design speed through a main airstream having a main flow direction, a combination of an airfoil, engine and engine nacelle, said combination comprising:

(a.) an airfoil having a leading edge, a trailing edge, and a lower aerodynamic surface, said airfoil having a predetermined (weep) sweep angle of at least 10°, and having an outboard end and an inboard end,

(b.) a nacelle mounted directly adjacent to said airfoil at a location below and forwardly of said airfoil, said nacelle having a forward section extending forwardly of the leading edge and a rear section positioned rearwardly of the leading edge, said nacelle having an inboard side surface portion and an outboard side surface portion,

(c.) an engine mounted in said nacelle,

(d.) said airfoil being characterized in that in a situation where the airfoil would be passing in flight through said airstream at the design speed, but without aerodynamic interference from other objects in proximity thereto, said airfoil would create in said airstream an airstream flow pattern having a plurality of streamlines which approach the leading edge and pass under the airfoil, with the airfoil creating in said airstream flow pattern a critical zone, which zone includes a general area in said airstream flow proximate said airfoil, where at least one of the following conditions occur:

1. a local pressure coefficient in said airstream flow has an absolute magnitude greater than 0.05,

2. said airstream flow about said airfoil is supersonic,

(e) said nacelle having a critical surface region which comprises the nacelle side surface portions adjacent an airfoil portion that sweeps laterally and forwardly from the nacelle,

(f) said nacelle having a critical contour area which comprises an area where any portion of the critical surface region is within said critical zone,

(g) the critical contour area of the nacelle being in substantial contour alignment with the streamlines immediately adjacent the critical contour area to thereby reduce interference between said nacelle and said airfoil, which streamlines form a stream sheet, said critical contour area having a forward portion forward of the leading edge and sloping rearwardly in a direction slanted from said main flow direction in a direction of rearward sweep of said airfoil, said critical contour area having a rear portion rearward of said leading edge sloping rearwardly in a direction from said main flow direction also in the direction of rearward sweep of the airfoil,

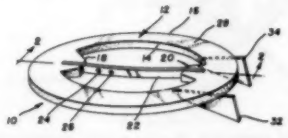
(h) other nacelle surface portions which are not included in the critical contour area being collectively a non-critical contour area, said non-critical contour area having at least a substantial portion thereof shaped to conform to configuration requirements of said engine, with at least part of the substantial portion of the non-critical contour area departing from substantial contour alignment with adjacent streamlines.

4,436,264

FLYING DEVICE

Elmer B. Brumfield, 1136 W. Long, Stephenville, Tex. 76401

Filed Aug. 9, 1982, Ser. No. 406,491
Int. Cl.³ B64C *31/06*
U.S. Cl. 244—153 R **9 Claims**



1. A kite fabricated of a lightweight material and comprising:

an annular body having a circular outer periphery, at least a generally circular inner periphery, and a relatively thin height with respect to its radial extent;

the annular body having a flat unobstructed top surface and a bottom surface which is part of the surface of a sphere;

a bar element lying on a diameter of the annular body and secured at it's ends to the annular body at said inner periphery;

the bar element limited in height to confinement between the plane of said top surface and the surface of the sphere;

the bar element being structured so as to directly accommodate the kit tow line at a forward location; and

rudder means disposed at the trailing location of the annular body and in symmetry with said diameter.

4,436,265

CABLE SOCKET WITH TRACTION RELIEF FOR THE HOUSINGS OF ELECTRIC MACHINES

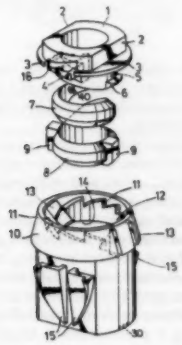
Hans Simon, Bruchhausener Strasse, 5463 Unkel am Rhein, Fed. Rep. of Germany

Filed May 6, 1981, Ser. No. 261,241

Claims priority, application Fed. Rep. of Germany, May 12, 1980, 3018119

Int. Cl.³ H02G *3/18*; H01B *17/26*; F16L *5/00*

U.S. Cl. 248—56 **16 Claims**



1. A cable socket providing traction relief adapted to be mounted in an opening formed in a wall of a housing for electrical components, comprising:

a tubular grommet insertable into an opening in a housing wall and including a grommet head for supporting the grommet on a housing wall;

an inner socket portion coaxially situated within said tubular grommet so as to be twistable therein around a common axis of the grommet and inner portion, said inner portion having a passage opening for receiving a cable and including a head portion and a flexible extension for encompassing a cable passing through said passage opening, said flexible extension having a first end connected to said head portion and a free end region spaced from said head portion;

means for securing said free end region of said flexible extension of said inner socket portion to said tubular grommet so that said free end region is prevented from twisting with respect to said grommet when said inner socket portion is twisted within said grommet; and

means for locking said inner socket portion to said grommet against rotation therein,

whereby upon twisting said inner portion with respect to said grommet with a cable received in said passage opening and said free end region of said flexible extension secured to said grommet by said securing means so as to be prevented from twisting with respect to said grommet, said flexible extension is twisted to compress against the cable to hold the same in the socket.

4,436,266

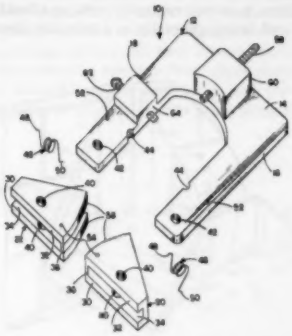
CONDUIT SUPPORT DEVICE

Thomas W. Gerding, 5805 Hawkins- Fuchs Rd., St. Louis, Mo. 63129

Filed Mar. 26, 1982, Ser. No. 362,551

Int. Cl.³ F16L *3/08*

U.S. Cl. 248—74 R **23 Claims**



1. A conduit support device operable in all angular orientations for holding and supporting a conduit member therein, said device comprising a frame member having a pair of laterally spaced leg members extending therefrom defining a space therebetween, closure means including a closure member and journal means pivotally attaching the closure member to one of said leg members adjacent the free end thereof for controlling access to the space defined between said leg members, said closure member being rotatably movable about the journal means between a closed position restricting access to the space between said leg members and an open position angularly related thereto to open the space between said leg members for admitting a conduit member therebetween, said closure member having a first portion movable between the open position substantially in alignment with the leg member to which it is pivotally attached and the closed position substantially normal thereto extending between said leg members, said closure member having a second portion engageable with the leg portion in the closed position thereof to limit movement thereof, said closure member being movable to its open position in response to a force exerted thereagainst, said force being applied in a direction towards the space defined between said leg members, and yieldable means biasing said closure member towards the closed position thereof.

4,436,267

HOSE HANGER

Harold O. Eads, Parkersburg, W. Va., and Ronald R. Fowler, Coolville, Ohio, assignors to O. Ames Co., Parkersburg, W. Va.

Filed Mar. 29, 1982, Ser. No. 363,374

Int. Cl.³ A62C *23/04*; B05B *15/06*

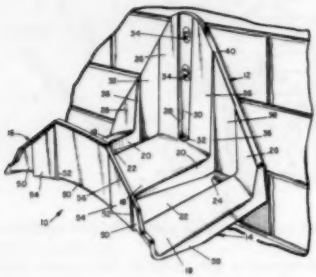
U.S. Cl. 248—75 **12 Claims**

1. In a hanger adapted to be fixedly attached to a mounting wall for supporting a length of hose in coiled formation which comprises a one-piece body molded of plastic material, said body including an upright mounting wall engaging section adapted to be fixedly attached to a mounting wall, a hose coil supporting section extending horizontally from the bottom of said mounting wall engaging section and a hose coil retaining section extending upwardly from the horizontally outwardly extending end of said hose coil supporting section, the improvement which comprises:

said hose coil supporting section including spaced thin wall saddle portions defining hose coil engaging surfaces facing generally upwardly and disposed generally in an arcu-

ate plane and thin wall channel means integrally interconnected between said spaced thin wall saddle portions disposed below the adjacent hose coil engaging surfaces thereof and opening generally in a direction toward the same,

said mounting wall engaging section including spaced thin wall side portions defining hose coil retaining surfaces disposed in upwardly extending relation with respect to associated hose coil engaging surfaces of said saddle portions and facing generally in a direction thereabove and



thin wall channel means integrally interconnected between said spaced thin wall side portions disposed horizontally outwardly from the adjacent hose coil retaining surfaces thereof and opening generally in a direction toward the same,

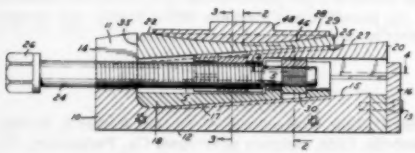
the thin wall channel means in said mounting wall engaging section being integrally connected with the thin wall channel means in said hose coil supporting section and providing mounting wall engaging surface means adjacent the integral connection thereof with the thin wall channel means in said hose coil supporting section.

4,436,268

SELF-ALIGNING LOAD LEVELING DEVICE

Frederick G. Schriever, 64 Claireview, Grosse Pointe Shores, Mich. 48236

Filed Jul. 20, 1981, Ser. No. 285,368
Int. Cl.³ F16M *11/24*
U.S. Cl. 248—188.3 **13 Claims**



1. A leveling device for supporting heavy loads comprising, in combination:

a. a base member;

b. a load supporting member disposed above the base member;

c. a pair of wedges positioned one above the other and disposed between said members, each wedge slidably engaging one of said members along an inclined interface;

d. said wedges slidably engaging one another along a non-inclined interface;

e. means connected to each of said wedges for slidably shifting them along said interface and relative to each other and to said base and load supporting members to thereby vary the height of the load supporting member relative to the base member; and

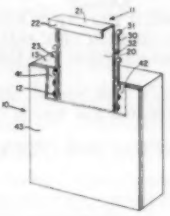
f. alignment compensating means for distributing a load evenly over the wedges despite misalignment between the load to be carried and the floor upon which the base may be rested.

4,436,269

DISPENSER SUSPENSION MEANS EMPLOYING PLANAR SPRING-LOADED DETENT

Robert S. Dirksing, Cincinnati, and Dale E. Barker, Hamilton, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 28, 1980, Ser. No. 210,965
Int. Cl.³ A47G *55/00*
U.S. Cl. 248—214 **16 Claims**



1. A vertically adjustable hanger for supporting a dispenser for adding a chemical to a toilet tank on a vertical wall member of said toilet tank at a predetermined height selected by the user, said hanger comprising:

(a) a planar bayonet member having a predetermined length, width and thickness, said bayonet member having means for being attached to said wall member, said bayonet member including at least one resiliently deformable projection located along a longitudinal edge thereof and extending outwardly in a direction generally parallel to the width of said bayonet member, said projection being resiliently deformable in the plane of said bayonet member in a direction generally parallel to the width thereof; and

(b) a channel means secured to said dispenser, said channel means having a predetermined length, width and thickness, said channel means having opposed longitudinal edges located in the plane of said bayonet member, said opposed longitudinal edges of said channel means being adapted to engage opposed longitudinal edges of said bayonet member, at least one of said longitudinal edges of said channel means having a multiplicity of vertically spaced projection receiving means having a shape substantially complementary to that of said projection located along at least one of said longitudinal edges of said bayonet member and adapted to engage said projection on said longitudinal edge of said bayonet member, whereby the vertical position of said dispenser may be adjusted as desired by advancing or retracting said bayonet member in said channel means in a direction generally parallel to its length by engaging said resiliently deformable projection on said bayonet member in one of said projection receiving means located along the adjacent longitudinal edge of said channel means.

4,436,270

SUPPORT MECHANISM OF SWIVEL SEAT STRUCTURE

Masakazu Muraishi, Higashimurayama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Jun. 25, 1981, Ser. No. 277,234
Claims priority, application Japan, Jul. 16, 1980, 55-97181
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—416 **11 Claims**

1. A support mechanism of a swivel seat structure having a seat cushion horizontally positioned over a floor surface, comprising:

a pivot element located below the seat cushion and having a center axis about which the seat cushion is horizontally

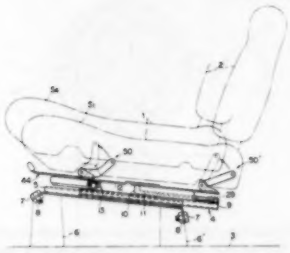
turnable with respect to the floor surface, the center of the pivot element being closer to the rear end of the seat cushion than to the front end of the seat cushion;

a base member which is held stationary with respect to the floor surface;

a swivel member carrying the seat cushion thereon and pivotally mounted on said base member by means of said pivot element, the swivel member being horizontally turnable on the base member about the center axis of the pivot element;

guide rails positioned below the seat cushion and in front of said pivot element and having an arcuate stationary guide rail which is held stationary with respect to the floor surface and an arcuate movable guide rail which is slidable on and along the stationary guide rail and which is secured to said swivel member for being turnable with the swivel member and the seat cushion about the center axis of said pivot element; and

retaining means positioned between said pivot element and said guide rails and arranged to provide retaining engagement between the base member and the swivel member while permitting the swivel member to turn on and with respect to the base member, the retaining means comprising a retainer pin which is axially clamped to the base member and the swivel member for providing said retaining engagement between the base member and the swivel member.

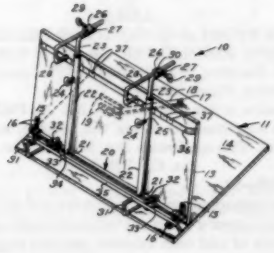


4,436,271

BOOK HOLDING DEVICE

Hipolito S. Manso, 95 Ten Eyck Walk, Apt. 73, Brooklyn, N.Y. 11206

Filed Jul. 16, 1982, Ser. No. 398,986
Int. Cl.³ A47B 97/04
U.S. Cl. 248—460 **1 Claim**



1. A book holding device, comprising, in combination, a flat base, a panel hinged by means of a pair of spaced-apart hinges upon a forward portion of said base, a plurality of spaced-apart cleats on a rear side of said panel, a brace pivoted upon a rear portion of said base for being propped under a selected one of said cleats, an elongated axle rod forming a single hinge pin extending through both said hinges, a pair of sleeves each having a transverse hole therethrough for being slidable along said axle rod, and in front of a front side of said panel, an "L"-shaped rod adjustably secured in an upper end of each said sleeve, a forwardly extending upper hook adjustably carried by each said "L"-shaped rod, a pair of bushing sleeves slidable along said axle rod, a bushing affixed on each said bushing sleeve, a forwardly extending lower hook adjustably carried by each said bushing, a horizontal book rest located forwardly of a lower portion of said sleeves and supported at opposite ends upon opposite ends of said base forward portion, and a horizontal bar extending across a front upper portion of said panel being located between said panel and the first said sleeves, a plurality of plastic segments being along a front side of said bar.

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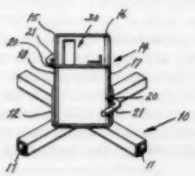
CHRISTMAS TREE STAND HAVING STABILIZED CLAMPING MEMBERS

James B. Lile, Rte. 1, Russellville, Ark. 72801, and Dan C. Mathes, Jr., 301 Ridgeway, Little Rock, Ark. 72205

Filed Apr. 2, 1982, Ser. No. 364,791
Int. Cl.³ A47G 33/12
U.S. Cl. 248—527 **6 Claims**



1. A clamping stand for Christmas trees and the like, comprising a vessel having a continuous vertical wall, whereby the bottom of the trunk of such tree may be received therein, base means secured thereunder, a pair of horizontal clamping screws threaded through the vertical wall of the vessel and presented opposite to each other, and a vertical clamping member mounted on the inner end of each clamping screw, characterized in that each clamping screw has, spaced from its inner end, a reduced diameter neck portion terminating outwardly in a shoulder, further characterized in that each vertical clamping member has, substantially along its mid-height, a vertical slot including a rounded lower end portion sufficiently large to pass over the inner end of a clamping screw and a narrower slot portion extending upwardly therefrom, said narrower portion being sufficiently wide to engage slidingly on the neck portion of the clamping screw but smaller than the shoulder thereof, whereby on so screwing a screw inner end through the vessel wall as to project inwardly into the vessel, the clamping member may be mounted thereon by passing the lower end of said mid-level slot over the clamping screw inner end and sliding the said slot downward along the neck portion, and whereby clamping may thereafter be achieved by pressure of the shoulder against the clamping member.

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FASTENING MEANS FOR REARVIEW MIRROR IN AUTOMOBILE INTERIOR

Takuo Yuda, Yokohama, and Yoshiaki Notoya, Zushi, both of Japan, assignors to Nifco Inc., Yokohama, Japan

Filed Dec. 10, 1981, Ser. No. 329,491

Claims priority, application Japan, Dec. 16, 1980, 55-179562[U]

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—549 2 Claims

1. A fastening means for a rearview mirror in an automobile body, which comprises a fastening base integrally formed at the basal end of an arm for supporting the rearview mirror, a fixing member made of a synthetic resin, and a setscrew adapted to secure said fixing member to the automobile body, said fixing member being provided with a tubular screw-receiving portion and a domelike flange-shaped engaging head portion extended from the peripheral surface of said screw-receiving portion, said engaging portion on the side opposite to the tubular portion being convex and having an underlying peripheral surface engageable with said base, said engaging head portion being provided with thin-walled portions for enabling said flange shape of the engaging portion to be broken under an impact, said thin walled portion comprises an annular groove encircling said tubular member and a plurality of grooves radiating outwardly therefrom, said fastening base being provided with a perforation for permitting insertion therein of the screw-receiving portion of said fixing member thereby enabling said engaging portion to come into fast engagement with the edge of the perforation, and said setscrew being adapted to be passed through the hollow part of said screw-receiving portion and driven helically into the automobile body, whereby said fastening base is attached fast to the automobile body through the medium of said fixing member.

4,436,274

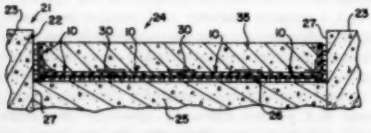
VIBRATION DAMPENING SUPPORT

James H. Kramer, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Feb. 23, 1981, Ser. No. 237,232

Int. Cl.³ F16M *1/00*

U.S. Cl. 248—633 5 Claims



1. A vibration isolation pad for the support of machinery wherein a concrete floor is to support such machinery, said floor having a pit with sidewalls and a support base of concrete, a first set of flat composite pads laying on said support base in abutting relationship to cover said base, a second set of flat composite pads lying in planes normal to said first set and abuttingly contacting said sidewalls, a concrete pad in said pit frictionally engaging all of said composite pads, each of said pads having an outer layer of ultra-high molecular weight polyethylene that contacts said concrete pad, each of said pads having an inner layer of elastomeric material bonded to said outer adjacent layer, and each of said inner layer of elastomeric material having laterally and longitudinally spaced elastomeric projections molded thereto to provide vibration isolation to a machine mounded on said concrete pad.

4,436,275

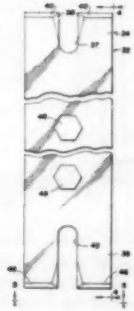
CONCRETE FORM EXTENDER DEVICE

Gary L. Hendershot, 7164 Groveland Rd., Holly, Mich. 48442

Filed Mar. 25, 1982, Ser. No. 361,559

Int. Cl.³ E04G *11/06*

U.S. Cl. 249—47 6 Claims



1. A concrete form assembly including a plurality of forms arranged in top to bottom relationship, each of such forms including a transverse metal strap including at least one outstanding scaffold bolt, the invention comprising:

a plurality of separate extender devices for holding said forms in assembled top to bottom relationship, each of said extender devices including a slotted upper end and slotted lower end, said slotted ends engaging respective scaffold bolts in tight holding relationship, said slotted ends further including sharpened slot portions and beveled end portions to facilitate assembly and clean-off of said bolts, said extender devices each including a pair of off-set portions proximate each of its end portions and adjacent to and abutting the corresponding straps, said extender portions further including a flat portion intermediate said off-set portions and in firm engagement with the forces of the adjacent upper and lower forms.

4,436,276

PIN SUPPORT AND MOLD FOR FOAMING AND CURING RESIN EXTERIOR OVER BALL CORE

Gordon J. Donahue, West Henrietta, N.Y., assignor to Voplex Corporation, Pittsford, N.Y.

Continuation of Ser. No. 341,743, Jan. 22, 1982, abandoned, which is a continuation of Ser. No. 182,816, Aug. 29, 1980, abandoned. This application Sep. 20, 1982, Ser. No. 419,904

Int. Cl.³ B29D *27/04*

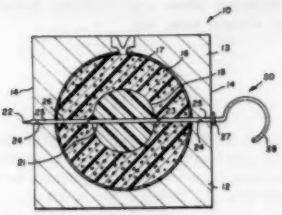
U.S. Cl. 249—91 3 Claims

1. A pin support and mold for foaming and curing a spherical resin exterior over a spherical ball core that is about one-half the diameter of said resin exterior, said pin support and mold comprising:

a. a two-part mold having a spherical cavity and a mold parting plane intersecting the center of said spherical cavity;

b. a bore hole extending through said mold parts at said mold parting plane, the axis of said bore hole being oriented to pass through said center of said spherical cavity;

c. a pin support including a straight shaft extending through a diameter of said core;
d. said shaft fitting snugly within said bore hole and extending for the length of said bore hole from one exterior side of said mold to an opposite exterior side of said mold to support said core within said spherical cavity;
e. said shaft having a locator abutment arranged to engage one of said exterior sides of said mold to locate said shaft axially relative to said mold exterior and thus locate said core within said spherical cavity;
f. said pin support extending outward beyond said locator abutment away from said engaged exterior side of said mold;



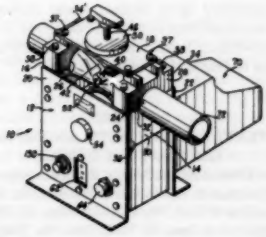
g. said outward extension of said pin support being formed as a coupling element disposed outside said mold;
h. said pin support being arranged so that, without moving said pin support, said mold parts can be separated when said foamed spherical resin exterior is partly cured, and said pin support can be moved clear of said mold to move said ball clear of said spherical cavity; and
i. said coupling element being shaped for hanging up said shaft to support said ball for curing in air out of contact with other surfaces for a curing time following molding of said resin exterior over said core.

4,436,277

TORQUE PINCH VALVE

Edward Robak, 5520 San Juan Dr., Orange, Calif. 92669, and Carter K. Reh, 13312 Loretta Dr., Santa Ana, Calif. 92705

Filed Aug. 10, 1981, Ser. No. 291,616
Int. Cl.³ F16K *7/06*
U.S. Cl. 251—6 **14 Claims**



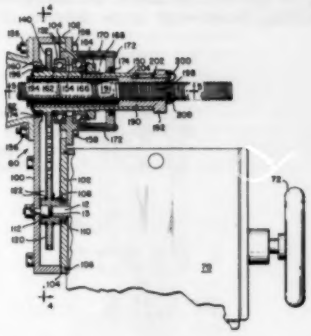
1. A pinch valve comprising:
(a) a housing formed of upper and lower half housings, having distal and opposite ports and a flexible conduit extending therebetween to form a fluid passageway through said housing,
(b) a pinch bar attached to an arm pivotally attached to the inside top wall of said upper half housing and a lead screw engaged in a threaded aperture in said top wall to provide an adjustment abutment stop for said arm; and
(c) a valve member movably mounted to the lower half housing with actuator means to urge said valve member between an open position permitting unobstructed flow through said conduit and a throttling position constricting said flexible conduit between said valve member and anvil means,
whereby said valve is operable to control rate of flow and to shut off flow, as determined by the adjustable position of said anvil means.

4,436,278

DISCONNECTABLE VALVE MOTOR DRIVE

Glen H. Smith, Algona, Wash., assignor to Morgan Industries, Inc., Seattle, Wash.

Continuation of Ser. No. 128,958, Mar. 10, 1980, abandoned. This application Jun. 19, 1981, Ser. No. 275,340
Int. Cl.³ F16K *31/05*; F16D *1/00*
U.S. Cl. 251—130 **13 Claims**



1. An offset drive assembly for coupling a valve stem to a motor, comprising:
a drive motor having an output shaft;
a valve having a stem offset from the motor shaft, the stem having a threaded end;
means for driving the stem of the valve from the motor which comprises:
a collar rotatably coupled to the drive motor output shaft;
a stem nut releasably and drivably engaged with said collar and threaded on the threaded end of the stem, said stem nut and collar being co-axial with one another; and
a removable locking member releasably locking the stem nut and the collar together in fixed relative relation for co-axial rotation, the locking member interconnecting the stem nut and collar and being accessible from the exterior of the offset drive assembly for rapid and easy release of the collar from driving engagement with the stem nut by removal of the member without further disassembly of the offset drive assembly to allow manual rotation of the stem nut to drive the stem independent of the drive motor.

4,436,279

STEM CONNECTION FOR GATE VALVE

James V. Bonds, Houston, and Paul R. Orum, Stafford, both of Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

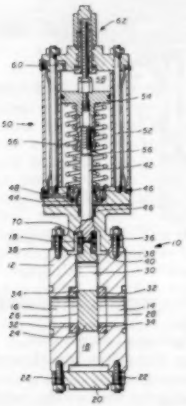
Filed Dec. 27, 1982, Ser. No. 453,568
Int. Cl.³ F16K *25/00*, *31/143*
U.S. Cl. 251—86 **7 Claims**

1. An improved stem connection structure for connecting a stem to a gate member in a reciprocating gate valve of the type having a valve body with a valve chamber and inlet and outlet flow passages communicating with the valve chamber, a gate member slidably mounted within the valve chamber for movement between open and closed positions relative to the flow passages and having an externally threaded upper gate extension thereon, the gate extension having a first slot formed

therein being disposed in substantially parallel relation with the longitudinal axes of the inlet and outlet flow passages, a bonnet connected to the valve body to form a closure for the valve body, an operating stem carried by the bonnet and having a stem extension on the lower end thereof disposed within the valve chamber, the stem extension having an elongated key formed on its lowermost end received by the first slot of the gate extension to form a key-slot combination, and the stem having operator means connected to an upper end thereof for moving the stem and gate member in a direction transversely to the direction of fluid flow through the flow passages, wherein the improvement comprises:

the stem extension having an externally threaded portion contained thereon adjacent and above the elongated key;

an internally threaded collar threadably engaging the stem extension and having an axial bore therethrough in axial alignment with the longitudinal axis of the stem surrounding the key-slot combination, and having a second slot extending therethrough in the direction of fluid flow



through the gate valve, releasable locking means on the collar for releasably securing the collar to the stem extension at a predetermined position;

an adjusting nut fitting within the second slot and threaded onto the gate extension for providing a connection between the stem and gate member, the second slot having supporting means for retaining the nut and collar in engaging relationship and retaining the key-slot combination in engaging relationship, the second slot permitting movement of the nut and gate member relative to the longitudinal axis of the stem in a direction generally parallel to the longitudinal axis of the flow passage, the adjusting nut being accessible through the second slot without disassembly of the stem and gate member for manual axial adjustment of the gate member relative to the longitudinal axis of the stem so that the gate member port can be aligned with the inlet and outlet flow passages when the gate member is in the open position; and

releasable locking means on the nut for releasably securing the nut to the gate extension at a predetermined position.

4,436,280

VALVE ACTUATOR MECHANISM FOR LIFT-TURN TYPE VALVES

Bernard H. Geisow, Houston, Tex., assignor to Daniel Industries, Inc., Houston, Tex.

Filed Sep. 30, 1982, Ser. No. 429,300

Int. Cl.³ F16K *31/50, 31/52, 31/54*

U.S. Cl. 251—229 **23 Claims**

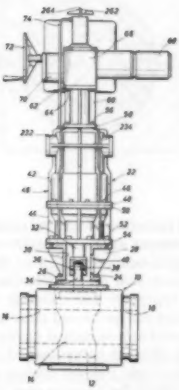
1. A valve actuator mechanism for a lift-turn type plug valve having an internal valve element for movement between an opened and closed positions and incorporating a valve stem, which valve element is operated by linear unseating movement, rotational repositioning movement and linear reseating movement, said valve actuator mechanism comprising:

an actuator housing adapted for fixed assembly with said plug valve;

a first actuator stem extending from said housing and adapted to be connected in nonrotatable and linearly immovable relation with said valve stem;

a second actuator stem being movably positioned within said actuator housing and being in co-axial spaced relation with said first actuator stem;

means imparting linear and rotational movement to said second actuator stem; and



movement translation means incorporating gear means and operatively interconnecting said first and second actuator stems, said movement translation means moves said valve element in one of said valve element positions and being operative during a first linear movement of said second actuator stem to impart linear movement to said first actuator stem in one direction to unseat said valve element, being operative upon combined linear and rotational movement of said second actuator stem to impart solely rotational movement to said first actuator stem and being operative upon further linear movement of said second actuator stem in said one direction to impart solely linear movement to said first actuator stem in an opposite direction to reseat the valve element.

4,436,281

BUTTERFLY VALVE WITH AN IMPROVED OBTURATION DEVICE

Alain Chiron, Oloron Sainte Marie, France, assignor to Applications Mecaniques et Robinetterie Industrielle, France

Continuation of Ser. No. 152,411, May 22, 1980. This application Jan. 29, 1982, Ser. No. 344,046

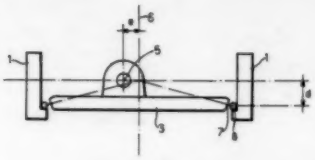
Claims priority, application France, May 23, 1979, 79 13175

Int. Cl.³ F16K *1/22*

U.S. Cl. 251—305 **9 Claims**

1. A butterfly valve having an unwedged butterfly gate, optionally off-centered in relation to its drive axis, and a seat perpendicular to the axis of the valve body, characterized in that the peripheral edge surface of said butterfly gate is formed by two surfaces whose cross-sections are curves of the same family, and has a configuration such that normals to it in the regions on both sides of the plane of symmetry of the butterfly gate containing the axis of rotation or parallel to it intersect the axis of symmetry of the seat, normal to the seat plane, at two distinct points, C1 and C2, when the butterfly gate is in the

closed position, and the normals to one of the two surfaces converge at point C1, situated on said axis of symmetry, above said axis of rotation and the normals to the second surface converge at point C2 situated on said axis of symmetry under said axis or rotation, and that, for zones situated at the level of passage of the axis of rotation of the butterfly gate defined by



sectors forming an angle δ on both sides of the plane of symmetry of the butterfly gate containing the said axis, or parallel to it, the points of intersection of the normals intersect the segment limited by said points C1 and C2, with the resulting variations of points of intersection being effected progressively in a continuous manner.

4,436,282

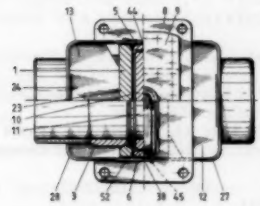
GATE VALVE WITH REINFORCING RIBS

Jan de Vries, Amsterdam, Netherlands, assignor to Thomassen Amsterdam B.V., Amsterdam, Netherlands

Filed Oct. 22, 1981, Ser. No. 313,644

Int. Cl.³ F16K *27/04*

U.S. Cl. 251—329 **4 Claims**



1. A gate valve comprising a body formed of flat end walls and flat side walls interconnected by welding to form a substantially rectangular cross section in a plane perpendicular to said end walls, said end walls having aligned openings forming flow passages, a plurality of metal reinforcing ribs extending across the exterior faces of said end walls and in engagement with said end walls on opposite sides of the body, said ribs being disposed in parallel planes parallel to the axis of the flow passage and perpendicular to the longitudinal axis of the body, each rib on one side of the body being in the same plane as a rib on the other side of said body, each rib having an inner portion of the periphery in contact with an end wall and an outer portion of the periphery spaced away from the end walls and extending parallel thereto, the improvement comprising a strap extending around each pair of opposite ribs, the straps extending parallel to the side walls of the body, the straps being securely attached to the ribs only at said outer portions of the periphery.

4,436,283

GATE VALVE

John H. Shore, 8 Cherokee St., Shawnee, Okla. 74801

Filed Apr. 29, 1982, Ser. No. 373,004

Int. Cl.³ F16K *25/00*

U.S. Cl. 251—174 **2 Claims**

1. A gate valve especially adapted for use in a horizontal position in which the gate thereof reciprocates in a substantially horizontal plane comprising:

a valve body having a cylindrical bore projecting into one side of the body and forming a gate chamber in the body for the accommodation of the gate of the valve;

a gate reciprocably mounted in said gate chamber;

a closure plate removably secured to said valve body and extending across and closing the opening to said bore at one side of the valve body;

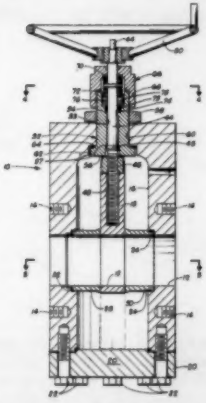
a bonnet opening formed in said valve body on the opposite side thereof from said closure plate and communicating with said bore;

fluid flow passageway means in said valve body for permitting fluid to flow through said gate valve when said gate is open, said fluid flow passageway means comprising:

a first bore portion projecting into said valve body along an axis extending normal to the axis of said cylindrical bore forming said gate valve chamber;

an upstream seat counterbore registering with and opening into said first bore portion, said upstream seat counterbore being disposed in concentric and coaxial relationship to said first bore portion and projecting from said first bore portion to said gate bore, and communicating at one of its open ends with said gate bore;

a second bore portion projecting into the opposite side of



said valve body from said first bore portion and in axial alignment with said first bore portion;

a downstream seat counterbore aligned with and opening into said second bore portion, said downstream seat counterbore being concentric and coaxially related to said second bore portion, and said downstream seat counterbore extending from said second bore portion to said gate bore and opening into said gate bore on the opposite side thereof from said upstream seat counterbore;

a first shoulder formed at the intersection of said first bore portion and said upstream seat counterbore; and

a second shoulder formed at the intersection of said second bore portion and said upstream seat counterbore;

an annular wave spring bearing against said first shoulder and concentrically surrounding the axes of said upstream seat counterbore and said first bore portion;

an annular upstream seat slidably mounted in said upstream seat counterbore and having a first end bearing against said wave spring and a second end bearing against one side of said gate;

an annular downstream seat slidably mounted in said downstream seat counterbore and concentrically surrounding the axes of said downstream seat counterbore and said second bore portion, said downstream seat having a first end adjacent said second shoulder and having a second

end in contact with the opposite side of said gate from the side contacted by said upstream seat;

a bonnet including a neck portion projecting through said bonnet opening and carrying external threads at a location outside said valve body, said bonnet further including an annular flange at the end of said neck portion inside said valve body;

sealing means between said annular flange and said valve body;

bonnet retainer means threadedly engaged with the external threads on said neck portion and located outside said valve body;

a valve stem having a first end threadedly and adjustably connected with said gate for causing reciprocation of said gate when said valve stem is rotated, and having a second end outside said valve body;

an operating handle outside said body and connected to said valve stem for rotation of the valve stem when said operating handle is rotated; and

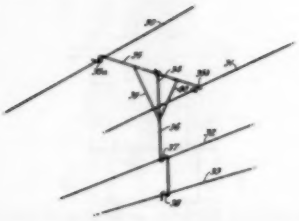
packing means secured to the end of said bonnet outside said valve body and packingly surrounding said valve stem.

4,436,284

TENSED WIRE SUSPENSION SYSTEM

Arturo G. Varela-Hernandez, California 2040 Apt. 152, Santiago, Chile

Filed Aug. 5, 1982, Ser. No. 405,547
Int. Cl.³ E04H *17/02*
U.S. Cl. 256—35 **4 Claims**



1. A system for forming trellises, fences, and self-supporting structures comprising: a plurality of wires of substantially equal length, each having first and second ends; first and second means for anchoring said wires at said ends to place said wires under substantial tension and position the same in substantially mutually parallel relation; and laterally extending link elements interconnecting said plurality of wires at periodic intervals between said first and second terminals, for the transmission of laterally applied forces exerted thereon, said link elements being free of other interconnection and comprising lengths of relatively rigid wire bent at intervals to form Z-shaped loops each comprising two offset parallel portions and an angular connecting portion disposed at acute angles to said parallel portions and extending linearly therebetween, said wires being interlaced between the same sides of said parallel portions and around the facing side of said connecting portion intermediate the linear extent thereof to be held in laterally non-slipping engagement with said like elements.

4,436,285

METHOD AND APPARATUS FOR OPENING BLAST-FURNACE TAP HOLES

Robert T. Woodings, Box W, Mars, Pa. 16046

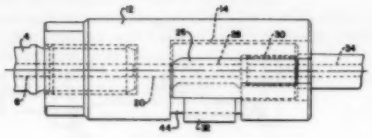
Filed Jan. 20, 1982, Ser. No. 340,866
Int. Cl.³ C21C *5/48*
U.S. Cl. 266—45 **4 Claims**

1. In apparatus for opening the iron notch of a blast furnace, said apparatus comprising:

a striking bar,

pneumatic means for imparting rotary motion to said striking bar about its longitudinal axis and reciprocating hammering motion to said striking bar, and

a drill rod having a connection to said striking bar, said drill rod having at an extremity thereof remote from said connection a drill bit for removing clay or mud from said iron notch, the improvement wherein:



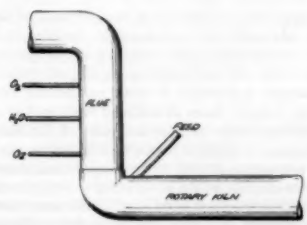
(a) said connection is of a quick-change type and (b) said apparatus further includes an elongated poking bar having at one end thereof means for securing said poking bar to said connection of a quick-change type.

4,436,286

PROCESS OF AFTERBURNING COMBUSTIBLE CONSTITUENTS OF EXHAUST GASES FROM ROTARY KILNS

Wolfram Schnabel, Idstein; Ernst Scheu, Frankfurt am Main, and Harry Serbent, Hanau, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 14, 1982, Ser. No. 417,956
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1982, 3208987
Int. Cl.³ C21B *13/08*
U.S. Cl. 266—44 **7 Claims**



1. In a process of afterburning combustible constituents of exhaust gases from rotary kilns used for metallurgical processes, comprising afterburning the exhaust gases from the rotary kiln at a temperature above their ignition temperature in an afterburning chamber and supplying oxygen-containing gases to said afterburning chamber, the improvement comprising burning part of the combustible constituents in each of a plurality of series connected stages in said afterburner, supplying each of such stages with oxygen at a controlled rate, and cooling the gas which is about to enter each succeeding stage by injecting water to a temperature above the ignition temperature of the gas and below the caking temperature of the entrained fine dust.

4,436,287

METHOD FOR PROTECTING TUYERES FOR REFINING A MOLTEN IRON

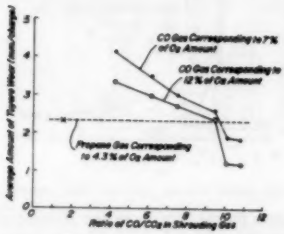
Toshikazu Sakuraya; Hideo Nakamura; Nobuo Harada; Tetsuya Fujii, and Toshihiko Emi, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Jul. 6, 1983, Ser. No. 511,511

Claims priority, application Japan, Jul. 12, 1982, 57-120961; Jul. 12, 1982, 57-120962; Jul. 12, 1982, 57-120963; Jul. 12, 1982, 57-120964

Int. Cl.³ C21B 7/16

U.S. Cl. 266—47 8 Claims


CO Gas Corresponding to 7% of O2 Amount
CO Gas Corresponding to 12 % of O2 Amount
Propane Gas Corresponding to 4.3 % of O2 Amount
Ratio of CO/CO2 in Shrouding Gas

1. A method for protecting tuyeres for refining a molten iron which penetrate a wall of a refining vessel and through which a refining gas flow consisting of oxygen gas or a gas containing oxygen is blown together with a shrouding gas flow surrounding the refining gas flow into a molten iron charged in a refining vessel, which comprises supplying a carbon monoxide-containing gas so as to satisfy the following equation

$$q_c \geq 4.8 q_o / x$$

wherein x shows a concentration (%) of carbon monoxide in the shrouding gas, q_c shows an amount (Nm^3/hr) of the shrouding gas flowed and q_o shows an amount (Nm^3/hr) of oxygen gas flowed from an inner pipe, to said tuyeres as the shrouding gas.

4,436,288

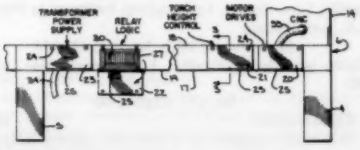
METAL MACHINING DEVICE WITH CONTROL CIRCUIT ISOLATION

James D. Kellogg, and August C. Mingesz, both of Milwaukee, Wis., assignors to C-R-O, Inc., Menomonee Falls, Wis.

Filed Sep. 27, 1982, Ser. No. 424,621

Int. Cl.³ B23K 7/02

U.S. Cl. 266—69 4 Claims



1. In a device for machining horizontally disposed fixed metal workpieces:

(a) a pair of gantries mounted for movement along longitudinally extending rails,

(b) an elongated transverse tool carrying bridge extending between said gantries and with said bridge having tool means mounted for movement therealong,

(c) a programmable computerized numerical machining control unit mounted adjacent one end of said bridge,

(d) supplemental electronic circuit means connected to said control unit,

(e) and said tool carrying bridge enclosing said circuit means therewithin so that electronic noise emanating from said circuit means is isolated thereby from said computerized control unit.

4,436,289

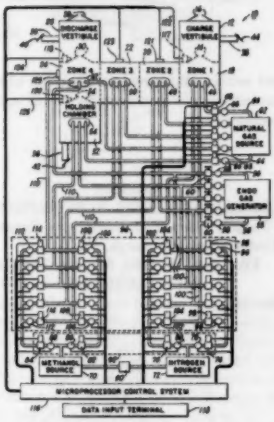
METHOD AND APPARATUS FOR CONTROLLING THE ATMOSPHERE IN A CARBURIZING FURNACE UTILIZING A CASCADED VALVING SYSTEM

John J. Connelly, Naperville, and Raymond A. Cellitti, Hinsdale, both of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed Sep. 17, 1981, Ser. No. 303,289

Int. Cl.³ C21B 7/24

U.S. Cl. 266—80 20 Claims



1. In carburizing apparatus of the type utilizing a carburizing furnace having multiple zones, and apparatus for applying nitrogen and methanol to the various zones, the improvement comprising:

first means for controlling the flow rate of the nitrogen and methanol into the furnace, said first means including means for providing a high flow rate to the furnace and for providing a low flow rate to the furnace, and second flow control means cooperating with said first flow control means for distributing the nitrogen and methanol to the various zones of the furnace in varying proportions, said system further including control means responsive to one or more components of the gas composition within the various zones for individually altering the proportions of nitrogen and methanol applied to the various individual zones to obtain a predetermined carbon potential in each zone.

4,436,290

PLASMA MELTING FURNACE ARRANGEMENT

Helmut D. Kilches, Asten; Walter Lugscheider, Linz; Ernst Riegler, Enns, and Ernst Zajicek, Ottensheim, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Aug. 27, 1982, Ser. No. 412,202

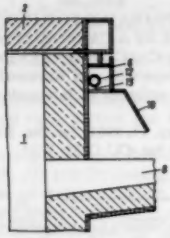
Claims priority, application Austria, Sep. 15, 1981, 3980/81

Int. Cl.³ C21B 7/22

U.S. Cl. 266—158 4 Claims

1. In a plasma melting furnace arrangement of the type including a cover, a melt container having a side wall and an upper rim, plasma burners arranged so as to be inclined towards the furnace axis and guided through said side wall, a main flue gas conduit connected to said cover and equipped with a draft regulating damper, and a separate discharge means provided for flue gases from other furnace openings, the im-

provement wherein said separate discharge means comprises a downwardly open channel attached to the outer periphery of said melt container adjacent said upper rim and wherein means



are provided within said downwardly open channel for supplying a protective gas downwardly in an area above said furnace openings.

4,436,291

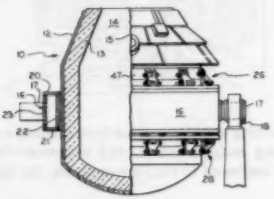
METALLURGICAL VESSEL SUSPENSION SYSTEM

Rashed N. Nagati, Mars, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Jan. 18, 1982, Ser. No. 340,316

Int. Cl.³ C21C *5/50*

U.S. Cl. 266—246 **5 Claims**



1. A metallurgical vessel subject to expansion and contraction during its operating cycles and including trunnion support means having a support surface at least partially surrounding the vessel and a plurality of link members each having a first pair of spaced apart legs extending longitudinally from one end and a second pair of spaced apart legs extending from the opposite end,

an auxiliary support,

the first and second pairs of legs of each member are respectively pivotally coupled to a first hinge means mounted on the vessel and a second hinge means mounted on the auxiliary support,

each hinge means including a first hinge member disposed between the legs of its pivotally connected link member and second and third hinge members disposed adjacent the opposite sides thereof,

and first and second pin means extending respectively through said first and second pairs of legs and the hinge members associated therewith, said pin means extending generally tangentially relative to said vessel,

the gap between the legs of the pair which is coupled to the vessel and the width of the hinge member disposed therebetween is less than the gap between the legs and of the pair which is coupled to the auxiliary support and the width of the hinge member disposed therebetween,

said auxiliary support having a surface substantially coextensive with and disposed in an opposed relation to said support surface, and

resilient means being disposed between said surfaces.

4,436,292

SYSTEM FOR THE TREATMENT OF A CONTINUOUS METAL WEB

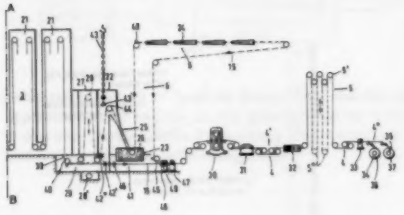
Martin Pfannschmidt, Heiligenhaus, Fed. Rep. of Germany, assignor to SMS Schloemann-Siemag AG, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 31, 1982, Ser. No. 363,836

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1981, 3106811; Apr. 9, 1981, 3114412

Int. Cl.³ C21D *9/56*; C23D *1/02*

U.S. Cl. 266—107 **13 Claims**



1. A system for the continuous and uninterrupted treatment of a continuous metal web, comprising an apparatus having a web feed station and a discharge station with an annealing station therebetween, a web entry storage station upstream of the annealing station in the direction of web travel, the discharge station including a web discharge storage station, means for continuously moving the web through said stations, whereby a continuous web annealing operation may be carried out, and a hot-dip coating station located between the anealing and discharge stations, means for selectively directing the web through the coating station for combining the annealing operation with a hot-dip web coating operation, and means for selectively by-passing the web from the coating station and directing the web into the discharge station to reconvert the combined annealing and coating operations solely into the web annealing operation, the means for by-passing the web and directing the web into the discharge station including means for severing the web between the annealing and coating stations to define a first leading web end and between the coating and discharge stations to define a first trailing web end, and means for joining the leading and trailing ends together.

4,436,293

ROTARY SUPPORT FOR CONTINUOUS CASTING LADLES

Paul Schmidt, Cologne, Fed. Rep. of Germany, and Edouard Legille, Luxembourg, Luxembourg, assignors to Paul Wurth S.A., Luxembourg

Filed Nov. 4, 1982, Ser. No. 439,354

Claims priority, application Luxembourg, Nov. 13, 1981, 83753

Int. Cl.³ C21B *3/00*

U.S. Cl. 266—276 **16 Claims**

1. In a rotary support for continuous casting ladles, which includes a vertical column, a drive mechanism for rotating the vertical column about its vertical axis, a cross arm carried by the vertical column and having at least one of its ends bifurcated to form a pair of support arms, each of the two arms comprising means for carrying between them a casting ladle, the improvement comprising:

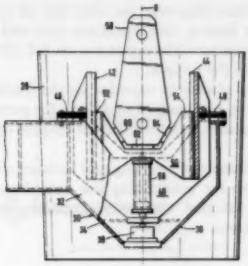
a support housing carried at the end of each of said support arms;

weighing cell means attached to said housing at the bottom thereof;

a U-shaped weighing frame vertically mounted in said housing, said weighing frame having an axis of symmetry;

said weighing frame being on said weighing cell and said

weighing cell being positioned along said axis of symmetry;
said U-shaped weighing frame having a pair of guide rails forming vertical guide arms;
ladle carrier carriage means adjustably mounted in said weighing frame and movable on said guide rails of said



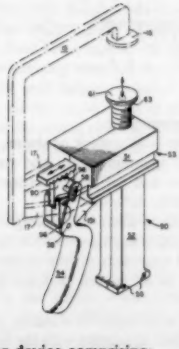
weighing frame, said carriage means being symmetrical with respect to said axis of symmetry;
means for raising and lowering said ladle carrier carriage means; and
stabilization means between said weighing frame and said housing.

4,436,294

ONE HAND CLAMPING DEVICE

Robert L. Irelan, 500 Fitch St., Socorro, N. Mex. 87801

Filed Feb. 22, 1982, Ser. No. 351,261
Int. Cl.³ B66F *3/00*
U.S. Cl. 269—6 **11 Claims**



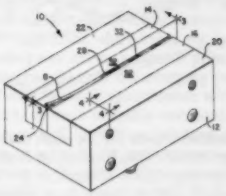
1. A clamping device comprising:
a main unit holdable in one hand by a user of the device;
first clamp means mounted on the main unit in a relatively fixed relationship thereto for engagement with one side of a work-piece to be clamped;
second clamp means mounted on the main unit in movable relationship thereto for in and out movement relative to the main unit for engaging the opposite side of the work-piece;
activating means for effecting the in and out movement of said second clamp means by the same hand holding the main unit;
means for permitting reversibility of operation of the device;
said second clamp means including an elongated screw mounted in said main unit with one end thereof extending out of said main unit, said elongated screw having means associated therewith for preventing rotation thereof;
said means for preventing rotation of said elongated screw consists of a slot lengthwise of the screw, and a guide plate removably mounted in the main unit which engages in the slot to prevent screw rotation;
said main unit having head and handle portions, the head portion receiving said guide plate, the guide plate having a recess therein, and a spring mounted detent also in the head portion which cooperates with said recess to resiliently retain the guide plate in the head portion.

4,436,295

VACUUM CHUCK FOR HOLDING FILAMENTS

Robert A. Wey, Plainville, and Harold A. Roberts, North Attleboro, both of Mass., assignors to Augat Inc., Mansfield, Mass.

Filed Jun. 12, 1981, Ser. No. 273,072
Int. Cl.³ B25B *11/00*
U.S. Cl. 269—21 **10 Claims**



1. A vacuum chuck comprising:
first and second blocks each having adjacent top and side surfaces set at substantially right angles to each other and having chamfered edges between said surfaces;
means for holding said first and second blocks with the side surfaces thereof in butting relationship and with said top surfaces having a V-shaped channel running thereacross formed by the chamfered edges;
the butted side surfaces of said first and second blocks having one or more matching slots forming one or more passages communicating with the V-shaped channel; and
means adapted for connecting a source of vacuum to said one or more passages;
wherein said holding means includes:
a cradle having a bottom and a pair of upwardly extending arms passing adjacent to sides of said first and second blocks opposite the abutting side surfaces; and
means for securing said first and second blocks to said cradle from said arms and for pressing said butting side surfaces together.

4,436,296

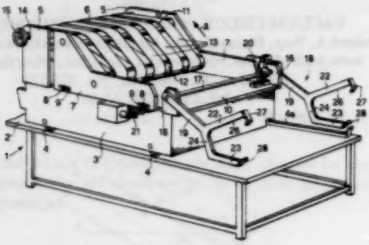
FEEDER DEVICE FOR FOLDING MACHINES

Carlo Fonio, Galliate, Italy, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jun. 24, 1981, Ser. No. 276,855
Claims priority, application Italy, Jun. 18, 1980, 22842 A/80
Int. Cl.³ B65H *29/46*
U.S. Cl. 270—31 **4 Claims**

1. A feeder device for withdrawing web material from a supply roll supported on a shaft (**29**) mounted on a folding machine of the type having a worksurface and a carriage mounted for reciprocating movement thereon for effecting advance of the web material onto the worksurface in folded superposed layers, said feeder device comprising:
(a) a conveyor supported on one end of the carriage including:
(i) a plurality of spaced rotatably driven cylindrical rollers (**6, 11, 12**);
(ii) at least one conveyor belt (**13**) in driving engagement with each said cylindrical rollers;
(b) a loader device (**18**) pivotally mounted at one end thereof to an end of the carriage opposite said conveyor and being bifurcated at an opposite end, said bifurcation being

formed by opposed arms, one of said arms having a support shaft (29) receiving portion for lifting the shaft (29) and web supply roll (25) mounted thereon from a loading position, the other arm includes a support surface (26) that supports the shaft to allow the supply roll (25) to lie against the conveyor belt (13) when said loader device is in a feed position to cause paying out of material from the roll (25), said support surface (26) of said other arm being elongated and merging with the shaft receiving portion to



form a continuous path for the shaft (29) to move along, said support surface (26) forming an inclined ramp when the loader device (18) is situated in the feed position to cause the shaft (29) to move there along and carry the support roll (25) into and for continuous engagement with the conveyor belt (13); and

(c) drive means for pivoting said loader device with said web supply roll between the loading position adjacent the worksurface to the feed position.

4,436,297

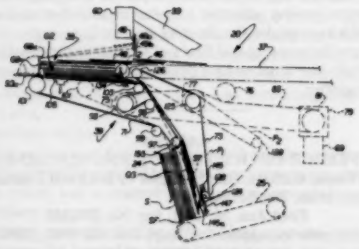
HORIZONTAL BINDERY LOADER ADAPTOR FOR FEEDING SIGNATURES INTO A VERTICAL POCKET

Mohanjit S. Chandhoke, Plattsburgh, N.Y., assignor to Harris Graphics Corporation, Melbourne, Fla.

Filed May 29, 1981, Ser. No. 268,170

Int. Cl.³ B65H *1/30, 1/02, 3/12*

U.S. Cl. 271—3.1 **9 Claims**



1. Apparatus for feeding signatures into a generally vertically extending pocket in which the signatures are supported on a folded edge and from which the signatures are fed by a feed mechanism, said apparatus comprising a frame,

a generally horizontally oriented hopper arranged to receive signatures in a generally horizontal array,

first feeding means for feeding said signatures from a loading position in a shingled stream with the folded edge trailing into said hopper, and

second feeding means for feeding a shingled stream of said signatures from said hopper, said second feeding means including means for feeding the signatures sequentially from the bottom of said hopper with the folded edge of each signature leading and for directing the signatures on folded edge into the generally vertically extending pocket,

said second feeding means including bottom feeding means for sequentially feeding the signatures individually off the bottom of the pack of signatures in the hopper in a reshingled stream into said generally vertically extending feed pocket, said bottom feeding means including conveyor means forming the bottom of said hopper, and

a vacuum manifold,

said conveyor means including a perforated conveyor belt operatively traveling over the inlet side of said vacuum manifold for feeding said signatures into said reshingled stream relationship while signatures are fed off the bottom of the pack in the hopper,

a signature stop adjustably mounted on the frame and movable relative to said pack of signatures for permitting said pack of signatures to have different lengths of signatures therein, and

means for simultaneously moving said vacuum manifold and signature stop for maintaining the same length overlap step in the shingled stream of signatures for different length signatures.

4,436,298

SHEET FEEDER

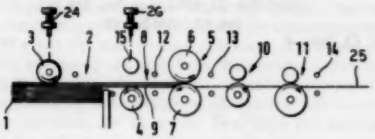
Siegmar Donner, Friedberg; Günter Strempler, and Manfred Schmid, both of Augsburg, all of Fed. Rep. of Germany, assignors to Kleindienst GmbH & Co. and KG Maschinenfabrik, both of, Fed. Rep. of Germany

Filed Jul. 31, 1981, Ser. No. 288,934

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1980, 3029458

Int. Cl.³ B65H *3/52*

U.S. Cl. 271—10 **6 Claims**



1. A sheet feeder comprising:

a support adapted to hold a stack of sheets;

a straight guide rail extending from said stack parallel to a transport direction and defining a transport path extending in said direction;

a generically cylindrical sheet-forwarding roller above said support and vertically engageable with the topmost sheet of said stack said sheet-forwarding roller being centered on and rotatable about an axis inclined to said direction and rail;

means for rotating said sheet-forwarding roller about the respective axis while in contact with the top-most sheet of said stack for displacing said topmost sheet in said direction and toward said rail;

feed rollers downstream of said sheet-forwarding

means for rotating said feed rollers and thereby advancing a sheet engaged thereby along said path in said direction;

means for vertically displacing said sheet-forwarding roller and urging same periodically down into contact with the topmost sheet of said stack;

a stripper roller underneath said path immediately downstream of said stack;

means for rotating said stripper roller in a direction to displace a sheet resting on it back against said transport direction;

a freely rotatable stripper roller above the first-mentioned stripper roller and vertically displaceable into engagement therewith; and

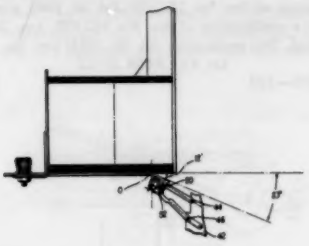
means for vertically displacing said freely rotatable roller.

4,436,299

SHEET FEEDING DEVICE

Winston A. Orsinger, Nazareth, Pa., assignor to Bell & Howell Company, Phillipsburg, N.J.

Filed May 26, 1981, Ser. No. 267,277
Int. Cl.³ B65H 3/08
U.S. Cl. 271—100 17 Claims



1. A pivoting-type of sheet separating mechanism for separating a bottom-most sheet from a main portion of a sheet stack comprising:

a main frame;

a hopper assembly mounted on said main frame for supporting a stack of sheets;

a sheet separating means for gripping a bottom-most sheet of the sheet stack and then moving along an arcuate path away from said sheet stack in a direction down and under said sheet stack, thereby bending a separated edge of said bottom-most sheet away from a main portion of said sheet stack; and

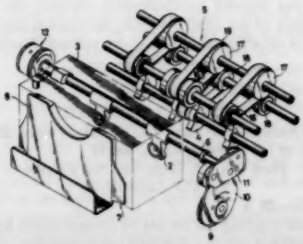
a linkage means for mounting said sheet separating means to said main frame for causing said sheet separating means to move in said arcuate path in said direction down and under said sheet stack so that the apparent pivot point of said sheet separating means is on the concave side of said arcuate path, said linkage means being mounted to said main frame on the convex side of said arcuate path, however, so that the actual pivot point of said sheet separating means is on the convex side of said arcuate path.

4,436,300

PAPER SHEET STRIPPER DEVICE

Kouichi Goi, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Sep. 2, 1981, Ser. No. 298,618
Claims priority, application Japan, Sep. 4, 1980, 55-122639
Int. Cl.³ B65H 7/16, 3/08
U.S. Cl. 271—107 5 Claims



1. A paper sheet stripper device for stripping sheets of paper one by one from a paper sheet bundle to feed the same to a conveyer assembly, comprising:

a vacuum source for generating a substantially constant reduced pressure,

a suction head assembly pneumatically connected with said vacuum source for sucking a low portion of the first sheet of the paper sheet bundle,

swinging means for swinging said suction head assembly from a suction position engaging with said lower portion of the first sheet of said paper sheet bundle to a take-up position for passing the paper sheets to said conveyer assembly, and

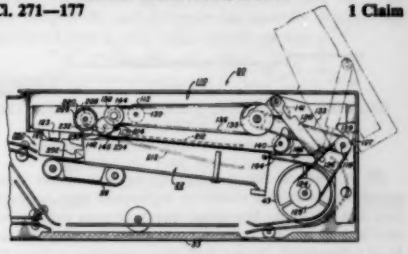
a valve interposed between said vacuum source and said suction head assembly for selectively communicating said suction head assembly with said vacuum source, said valve including a circular housing in communication with said vacuum source, a hollow timing member having a slit and being rotatably received within said housing, and a hollow cylindrical shaft for carrying said suction head assembly and for providing communication therewith, an end of said cylindrical shaft being received within said timing member and having a cut-out portion, the rotation of said timing member and the swinging movement of said cylindrical shaft being in synchronism with each other so that said suction head assembly communicates with said vacuum source and is under a substantially constant reduced pressure when in the suction position, and is out of communication with said vacuum source when in the take-up position.

4,436,301

DOCUMENT RESTACK TRANSPORT

Michael S. Doery, Rochester; Edward W. C. Hanzlik, Webster; John A. Adamek, Rochester, and William J. McLaughlin, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 2, 1981, Ser. No. 317,630
Int. Cl.³ B65H 29/32, 29/54
U.S. Cl. 271—177 1 Claim



1. In a recirculating document handler for sequentially feeding document sheets at a high rate of speed from the bottom of a document restacking tray to an imaging station of a copier and for sequentially returning the document sheets to said document restacking tray, the improvement in controlled high speed restacking of flimsy document sheets in said document tray comprising:

a plurality of vacuum sheet transport belts extending over said document restacking tray for retaining thereagainst and transporting flimsy document sheets out over said document restacking tray from adjacent an upstream (entrance) end thereof toward a downstream end thereof,

wherein one said vacuum belt is adapted to vacuum-retain one edge of each said flimsy document sheet,

and wherein a second said vacuum belt is spaced from said one belt by plural intervening said belts, and has a width greater than said intervening belts, so as to vacuum-retain the opposite edge of various popular lengths of said sheets,

sheet sensing means for sensing the transporting of a docu-

ment sheet over said document tray by said transport belts.

document sheet knockdown means actuated by said sheet sensing means for rapidly separating a transported document sheet from said transport belts and mechanically pushing that document sheet down into said document restacking tray when the document sheet is in a restacking position,

said document sheet knockdown means comprising a plurality of elongated bars interdigitated with said plurality of vacuum transport belts and recessed out of the document sheet path of said vacuum transport belts when not so actuating,

said elongated bars being pivotally mounted, relative to the sheet transport path of said vacuum sheet transport belts, to have a maximum knockdown effect on the trailing portion of a document sheet adjacent said upstream (entrance) end of said document restacking tray when so actuated,

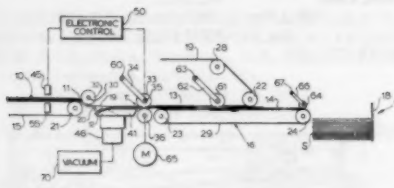
and means actuated in coordination with said document sheet knockdown means to remove vacuum from said vacuum sheet transport belts during said actuation of said knockdown means.

4,436,302

APPARATUS FOR SLOWING DOWN AND PREVENTING EDGE DAMAGE ON MOVING SHEETS

Kenneth G. Frye, South Egremont, Mass.; Donald C. Fitzpatrick, Chatham, N.Y., and Arthur T. Karis, Lenox, Mass., assignors to Beloit Corporation, Beloit, Wis.

Filed May 28, 1981, Ser. No. 268,002
Int. Cl.³ B65H *29/68*
U.S. Cl. 271—202 **34 Claims**



30. A method for overlapping cut-size sheets passing in seriatim flow from a relatively high-speed tape conveyor system to a relatively low-speed tape conveyor system, wherein said low-speed tape conveyor has sheet carrying surfaces at a level substantially lower than sheet-carrying surfaces for said high-speed tape conveyor system, comprising:

dropping sheets off a delivery end of said high-speed tape conveyor system onto a support plate such that the leading edge of each sheet extends horizontally outward initially and then gently curves toward said support plate and the trailing edge of each sheet bends off said delivery end so as to be snapped down flush with said support plate,

delaying each sheet downstream of said support plate by passing each sheet through a slowdown nip formed at the level of the carrying surfaces of said low-speed conveyor by upper and lower roll means such that the trailing edge of each sheet is overlapped by the leading edge of the next succeeding sheet as the leading edge of the next succeeding sheet drops off said high-speed delivery end,

slowing each sheet down to the speed of said low-speed tape conveyor system after each sheet has passed through said slowdown nip with a stop roll means rotatably disposed over said low-speed tape conveyor system, and

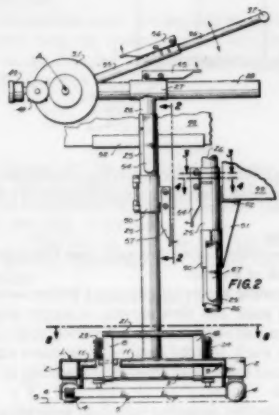
directing each sheet through said slowdown nip at a constant speed less than speed of said high-speed tape conveyor system but greater than the speed of said low-speed tape conveyor such that the trailing edge of each slowed sheet is further overlapped by the leading edge of the next succeeding sheet passing through said slowdown nip.

4,436,303

PHYSICAL THERAPY APPARATUS

James B. McKillip, 15243 Vanowen, Van Nuys, Calif. 91405, and Edmund J. Brown, 3186 N. Rossini St., Topanga, Calif. 90290

Continuation of Ser. No. 173,613, Jul. 30, 1980, abandoned, which is a continuation of Ser. No. 937,070, Aug. 28, 1978, abandoned. This application Jul. 18, 1981, Ser. No. 283,929
Int. Cl.³ A63B *21/22*
U.S. Cl. 272—132 **10 Claims**



1. An apparatus suitable for physical therapy comprising:

(a) a frame structure;

(b) an angularly movable shaft carried by the frame structure and engaged by a patient;

(c) (i) first and second clutch discs mounted on the shaft, (ii) a first one way drive means for moving the first clutch disc with the shaft only when the shaft angularly moves in a first direction, and (iii) a second one way drive means for moving the second clutch disc with the shaft only when the shaft angularly moves in a second direction opposite the first direction; and

(d) a pair of frictional adjusting means mounted proximate to the clutch discs, each adjusting means comprising a cylinder containing hydraulic fluid, a piston positioned in each cylinder for engaging a respective one of the clutch discs, and means associated with each cylinder for varying the pressure of the hydraulic fluid in each cylinder for varying the friction between each piston and its respective clutch disc, and thereby independently varying the frictional resistance of the shaft's angular movement alternately in the first direction and then in the second directions.

4,436,304

TENNIS TEACHING AID

Bonnie L. Castleman, 43 Ellen La., and Mary Jean, 25 Cliffside Dr., both of Manchester, Conn. 06040

Filed Jun. 18, 1981, Ser. No. 275,126
Int. Cl.³ A63B *61/00*
U.S. Cl. 273—29 A **3 Claims**

1. A tennis teaching aid for use on a tennis court having two net posts between which a standard net is stretched, said teaching aid comprising:

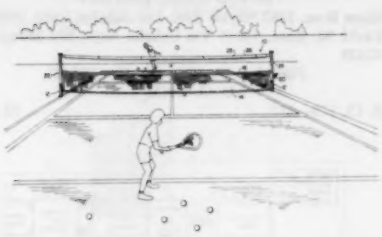
two auxiliary posts attachable respectively to said two net posts so as to extend vertically upwardly from said net posts, and

a target band assembly adapted for connection at its opposite ends to said two auxiliary posts so as to stretch between said posts in vertically spaced relation to the top of said standard net stretched between said net posts,

said target band assembly including at least one rope adapted to extend between and to be connected at its opposite ends to said auxiliary posts, and a target band attached to said rope and of a length approximately equal to the length of the said standard net stretched between said net posts,

means for releasably connecting one end of said rope to one of said auxiliary posts, and

means carried by the other of said auxiliary posts for releasably receiving the other end of said rope and for holding said end in a tightened condition with adjustable tension,



each of said auxiliary posts having a plurality of vertically spaced openings extending therethrough, said means for releasably connecting one end of said rope to one of said auxiliary posts including a snap hook connected to said one rope end and selectively receivable in any one of said openings of said one auxiliary post, and said means for releasably receiving the other end of said rope and for holding it in a tightened condition with adjustable tension comprising a jamb cleat device carried by said other auxiliary post below said vertically spaced openings therein so that said other end of said rope may be inserted through any selected one of said openings in said other auxiliary post to determine the heighth of said other end and may be received by said jamb cleat device to hold it in tightened condition.

4,436,305

COMPOSITE REINFORCED RACKET STRUCTURE

David Fernandez, Camarillo, Calif., assignor to American Sports Equipment, Camarillo, Calif.

Filed Aug. 26, 1981, Ser. No. 296,255
Int. Cl.³ A63B *49/02, 49/12*
U.S. Cl. 273—73 C **10 Claims**

1. A frame structure adapted for use as a tennis racket comprising:

a tubular frame in the shape of a racket, said racket having a handle, yoke and head, said frame including interior, exterior and side surfaces and having first and second end portions adjacent and parallel each other to form the racket handle, a semi-circular central portion forming the racket head and first and second mid portions located between the racket handle and racket head to form the racket yoke wherein said first and second mid portions diverge from each other from the racket handle to the racket head to form an open space between said mid portions where they join said central portion;

a plurality of surfaces defining elongated slots in said frame passing from said exterior frame surface to said interior frame surface, said slots being located at spaced locations in the racket handle, yoke and head

a unitary composite material racket support frame having an outer rim extending continuously around and adjacent to the frame exterior surface from said first end portion to said second end portion, an inner rim extending continuously around and adjacent to the frame interior surface from said first end portion to said second end portion, and a plurality of integral ribs extending through said elongated slots and joining said outer rim to said inner rim at the racket handle, yoke and head, said racket support frame further including one or more spaced integral support bars located in the racket handle and yoke and extending between and joining the inner rim of said support frame, wherein one of said support bars provides a string mounting and racket support bar integral with said inner

rim and extending across said open space between said inner rim where said frame mid portions join the frame central portion, said string mounting and racket support bar including a plurality of surfaces defining spaced holes adapted for mounting racket string;

a plurality of surfaces defining holes adapted for mounting racket string extending through said inner rim, outer rim and integral rib, said holes passing laterally through the elongated slots in said frame central portion.

4,436,306

EIGHT-SIDED GAME DICE WITH SUIT ATTRIBUTE MARKINGS

David M. Sanders, 705 Bay Ave., Capitola, Calif. 95010

Filed May 26, 1981, Ser. No. 267,147
Int. Cl.³ A63F *9/04*
U.S. Cl. 273—146 **3 Claims**

1. A set of five game dice, each die having eight faces, each

face bearing a numerical attribute marking selected from a range of eight ranked numerical attribute markings and a suit attribute marking selected from a set of five suit attribute markings, the suit attribute and numerical attribute markings for each face being selected so that:

each die bears one each of two of the five suit attribute markings thereon and two each of the remaining three suit attribute markings with the combinations of said two of the five and the combinations of said three of the remaining five suit attribute markings both being of differing combinations on each respective die;

each die bears each numerical attribute marking on exactly one face;

every possible combination of a suit attribute marking and a numerical attribute marking appears on exactly one face of the set of five dice with each of the two numerical attribute markings in the middle of said range of eight ranked numerical attribute markings appearing in combination with said one each of two of the five suit atribute markings on each respective die;

said two numerical attribute markings in the middle of said range of light ranked numerical attribute markings effectively dividing said range into three groups, a first group having the three lowest ranked numerical attributes, a second group having the middle two numerical attributes, and a third group having the three highest ranked numerical attributes; and

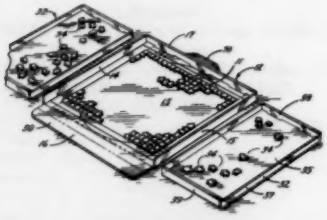
on each die, any two faces bearing the same suit attribute marking bear numerical attribute markings which occupy the same relative positions within said first and third groups of numerical attributes to permit the throwing of both ordinary and straight flushes.

4,436,307

DEVICE FOR FACILITATING ASSEMBLY, STORAGE AND TRANSPORTATION OF A JIGSAW PUZZLE

T. Francis Caldwell, Rockford, Ill., assignor to Puzzle Specialties, St. Charles, Ill.

Filed Jun. 10, 1982, Ser. No. 386,926
Int. Cl.³ A63F *9/10*
U.S. Cl. 273—157 R **11 Claims**



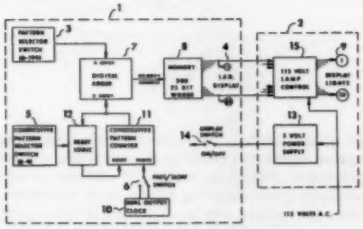
1. A device for facilitating assembly of a jigsaw puzzle and for enabling the puzzle to be transported, said device comprising a generally rectangular assembly tray for holding assembled puzzle pieces, a plurality of generally rectangular storage trays for holding unassembled puzzle pieces, each of said trays having a bottom wall and four upstanding side walls, the overall height of each storage tray being approximately equal to the overall height of the assembly tray, the overall length of each storage tray being slightly less than the overall length of the assembly tray, and the combined overall widths of the plurality of storage trays being slightly less than the overall width of the assembly tray whereby said storage trays may nest removably within and substantially fill said assembly tray, the bottoms of said storage trays being located adjacent the bottom of said assembly tray and engaging any assembled puzzle pieces therein to hold such pieces in assembled relationship when said assembly tray is turned on edge and transported, generally rectangular filler blocks for each of said storage trays, each of said filler blocks having an overall height approximately equal to the overall height of the respective filler tray and having an overall length and width somewhat less than the overall length and width of the respective filler tray whereby said filler blocks may nest removably within and substantially fill the respective storage tray, the bottoms of said blocks engaging any unassembled puzzle pieces in said storage trays and preventing such pieces from becoming inverted within said storage trays, and a removable cover disposed in covering relation with the outer sides of said blocks and connected to said assembly tray, said cover holding said blocks in said storage trays and holding said storage trays in said assembly tray.

4,436,308

BINGO GAME DISPLAY

William Rose, 7862 Naylor Ave., Los Angeles, Calif. 90045, and David M. Rose, 12849 Via Caballo Rojo, San Diego, Calif. 92129

Filed Jul. 17, 1981, Ser. No. 284,251
Int. Cl.³ A63F *3/06*
U.S. Cl. 273—237 **12 Claims**



1. A bingo game display comprising display means including a plurality of light means arranged in a matrix form corresponding to a bingo card, and control means coupled to the display means, the control means including memory means having stored therein information corresponding to a plurality of patterns desired to be displayed, and a single pattern selector switch means coupled to the memory means for providing an output for application to the memory means corresponding to a desired pattern to be displayed, the memory means being responsive at least to the output of the pattern selector switch means for supplying an output to the light means in accordance with the pattern selected for enabling energization of the light means according to the pattern selected, automatic sequencing means coupled to the memory means for providing an output to the memory means which automatically changes at predetermined intervals, said automatic sequencing means includes a counter means for being set to a predetermined number and for counting up to the predetermined number, consecutive pattern selector switch means for setting the predetermined number into the counter means, and means for varying the predetermined intervals including clock means for supplying clock pulses to the counter means, the counter means counting the clock pulses and supplying an output to the adder means in accordance with the count thereof, said clock means provides clock pulses at a fast and a slow rate, and the means for varying the predetermined intervals includes switch means for selecting one of the fast and slow rate clock pulses for application to the counter means, the memory address supplied by the adder means being changed at the rate of the clock pulses for causing sequencing of the memory means and the display patterns displayed by the light means, said memory means being responsive to the automatic sequencing means for automatically changing the output thereof at the predetermined intervals to energize the light means in accordance with different predetermined pattern according to the outputs of the pattern selector switch means and the automatic sequencing means, and digital adder means for supplying a memory address to the memory

means, the digital adder means receiving an input from the pattern selector switch means and an input from the automatic sequencing means for supplying as a memory address the sum of the two inputs, and reset means for resetting the counter means in response to the counter means counting up to the predetermined number, whereby different predetermined patterns are displayed during a game.

4,436,309

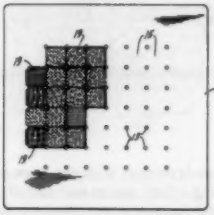
STRATEGY CARD GAME

Gordon A. Barlow, Glenview; John R. Newcomer, Des Plaines, and Fred Bezark, Northbrook, all of Ill., assignors to Gordon Barlow Design, Skokie, Ill.

Filed Feb. 8, 1982, Ser. No. 347,016

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—267 **3 Claims**



1. A game including:

a game board having a base and pegs upstanding on the base arranged in columns and rows to define a grid of uniformly sized squares,

a plurality of square cards,

each card being divided into nine colored squares identical in size to the squares of the game board,

notches formed along the sides of each card at the corners of each square and openings formed in the card at the corners of the center square so that the cards can be fitted over the pegs and against one another and the base of the game board,

the squares on the cards being arranged in patterns of color so that the cards can be placed on top of one another in a partially overlapping manner to ultimately form a pattern of nine contiguous squares of the same color when viewed from above.

4,436,310

SEALING DEVICE FOR JOINT

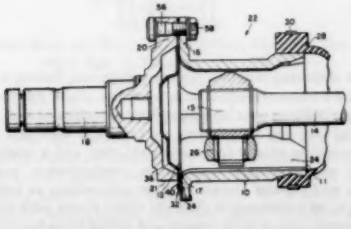
Masaki Sawabe, Okazaki, and Tadanobu Kumagai, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 24, 1982, Ser. No. 391,832

Claims priority, application Japan, Oct. 6, 1981, 56-147725[U]

Int. Cl.³ F16D *3/84*; F16J *3/00*

U.S. Cl. 277—11 **14 Claims**



1. A combination including a joint and a sealing device, said joint comprising a first shaft, a casing receiving an end portion of the first shaft through one end and provided with a flange on the periphery of the other end thereof, and a second shaft provided with a flange at one end thereof to be joined to the flange of the casing, said sealing device comprising a sealing member having an endless shape and provided with a plurality of projections, and an end cover with its periphery held between said flanges and adapted to hold the sealing member in association with the flange of said casing, said end cover being provided with a plurality of through holes each of which receives one of the projections of the sealing member, and said flange of said second shaft being formed so as to make visible from outside of said joint, when said flanges are joined, the reception of said projections in said holes.

4,436,311

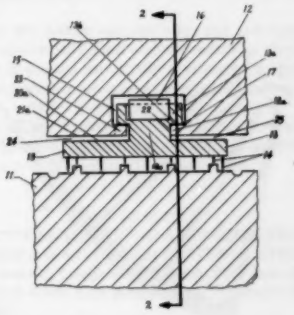
SEGMENTED LABYRINTH-TYPE SHAFT SEALING SYSTEM FOR FLUID TURBINES

Ronald E. Brandon, 1734 Lenox Rd., Schenectady, N.Y. 12308

Filed Apr. 20, 1982, Ser. No. 370,093

Int. Cl.³ F16J *15/44*

U.S. Cl. 277—27 **7 Claims**



1. In an elastic fluid turbine employing seals to minimize leakage between rotating and stationary components, an improvement in the seal arrangement utilizing the combination of:

a segmented seal ring supported by and at least partially contained in an annular groove formed in a stationary casing to permit motion of said seal ring between a large diameter position and a small diameter position corresponding respectively to large and small clearance of said seal ring with regard to the rotating shaft, said seal ring groove being partially defined by a pair of opposing, spaced apart shoulders on said casing which form an opening of said groove extending radially into the clearance area between said casing and said rotating shaft;

each segment of said seal ring including an inner arcuate portion hving seal teeth extending therefrom in the direction of and adjacent to said rotating shaft, a radially outwardly facing arcuate surface on said seal ring segment which is located opposite to a radially inward facing arcuate surface of said casing for limiting said large clearance position by contact between said opposing surfaces, an outer ring portion disposed within said seal ring groove for both axial and radial movement therein and having a pair of shoulders, extending axially in opposite directions for making radial contact respectively with said pair of spaced apart shoulders on said casing and thereby limiting said small clearance position, and a neck portion connected between said inner arcuate portion and said outer ring portion and extending between said casing shoulders, said neck portion having an axial thickness which is less than the distance between said opposing casing shoulders

to thereby axially locate said seal ring segment against one of said casing shoulders and provide a contact pressure seal at the said of said neck portion which is subject to lower turbine fluid pressure; and

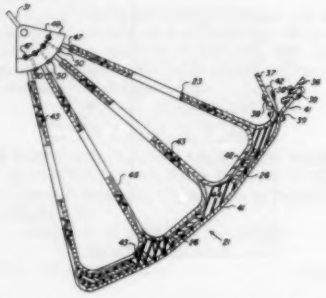
a radial positioning means comprising a compressed spring means biased against said ring segments to forcibly cause said segments to move to said large clearance position, while working fluid which is freely admitted to the annular space between said casing and said ring segments will urge said segments toward said small clearance position, whereby at low speed and small turbine loads the spring forces will predominate, while at high flows and high working fluid pressure the pressure forces will predominate.

4,436,312

TRANSVERSELY SUPPORTED SEAL

Sydney Davis, 704 Lamberton Dr., Silver Spring, Md. 20902, and Alexander Malakhoff, 590 S. Harrison St., Arlington, Va. 22204

Filed Jan. 29, 1982, Ser. No. 344,132
Int. Cl.³ B63B *1/38*
U.S. Cl. 277—34 **11 Claims**



1. A seal structure for an air cushion marine vessel of the type having a hull with spaced, depending sidewalls for forming a plenum chamber therebetween, comprising:

a flexible bag secured to the hull and positioned between the sidewalls to form an expansible chamber, said bag being deformable in response to fluid pressures exerted thereon;

a stiffened lobe portion positioned beneath said bag, said stiffened lobe portion including a membrane section and a plurality of elongated stiffener members connected to and extending traversely across said membrane section; and

support means connected to the hull for flexibly supporting said stiffened lobe portion beneath said bag;

wherein said support means includes positioning elements connected to the longitudinal end portions of said stiffener members, and adjusting straps connected to the hull and said positioning elements for limiting the downward deflection of said stiffened lobe portion.

4,436,313

DEVICE FOR SEALING A PROPELLER SHAFT AGAINST INVASION OF SEA WATER

Hiroshi Tamama; Yukio Ozawa, both of Saitama; Jingo Miyazaki, Tokyo; Hiroshi Ito, Saitama, and Toyohiro Kinoshita, Tokyo, all of Japan, assignors to Japanese National Railways, Tokyo, Japan

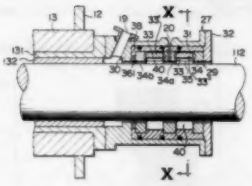
Filed Apr. 30, 1982, Ser. No. 373,803
Int. Cl.³ F16J *15/54, 15/40*
U.S. Cl. 277—80 **9 Claims**

1. A device for sealing a propeller shaft extending aftward from a surface of a ship against invasion of water, comprising:

(1) a cylindrical housing having a longitudinal axis and an inside surface having radial dimensions in excess of the radius of said shaft, concentrically surrounding said shaft, said housing having an aft end facing aftward;

(2) a plurality of longitudinally spaced annular iron pole blocks having radially outward surfaces, fixed on first concentric circles of said housing to said inside surface and radially inward surfaces spaced from the outer surface of said shaft adjacent said aft end of said housing, said iron pole blocks defining at least one annular space between at least two adjacent ones of said iron pole blocks, having a radially outward portion and a radially inward portion;

(3) a plurality of circularly arched circumferentially spaced permanent magnets mounted in said radially outward portion of each of said at least one annular space so as to



bridge said at least two adjacent ones of said iron pole blocks, leaving a first gap in said radially inward portion and inwardly of said iron pole blocks between the radially inward surfaces of each of said plurality of permanent magnets and said plurality of iron pole blocks on the one hand, and the outer surface of said shaft on the other hand; and

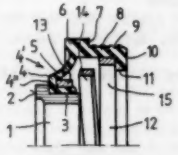
(4) magnetic fluid comprising magnetic material held in each said first gap; the aftmost one of said at least two adjacent ones of said iron pole blocks forming the aftmost magnetic element of said device in the magnetic circuit inclusive of said magnetic fluid in said each first gap; said magnetic fluid, said permanent magnet, said housing and said iron pole blocks defining a non-contact high-pressure seal.

4,436,314

SLIDE RING SEAL WITH SPRING TO RADIALLY BIAS IN OPPOSITE RADIAL DIRECTIONS

Paul Vossieck, Burscheid, Fed. Rep. of Germany, assignor to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Sep. 23, 1982, Ser. No. 422,191
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1982, 3202274; Jun. 18, 1982, 3222759
Int. Cl.³ F16J *15/36*
U.S. Cl. 277—86 **19 Claims**



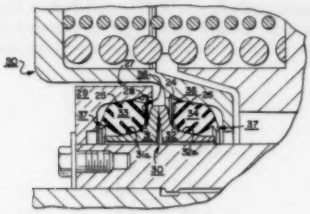
1. A slide ring seal comprising a slide ring having a central axis and a circumferential face; a tubular sleeve member comprising a bellows overlapping at least a portion of said circumferential face and an adhering part integral with said bellows and extending axially from said slide ring; and a compression spring approximately conical in configuration positioned within said tubular sleeve member comprising at least three spring turns positioned in different radial planes with respect to said central axis, at least two of said spring turns having different diameters, and wherein the spring turns having the smallest and largest diameter cooperate with said adhering part and

that portion of said bellows which overlaps said slide ring to radially bias said slide ring seal in opposite radial directions.

4,436,315
TWO PIECE SEAL ADAPTED FOR SIMPLIFIED INSTALLATION

Seymour A. Hatch, Bensenville, and James P. Morley, Arlington Heights, both of Ill., assignors to CR Industries, Elgin, Ill.

Filed Oct. 13, 1981, Ser. No. 311,148
Int. Cl.³ F16J 15/34
U.S. Cl. 277—92 **9 Claims**



1. A mechanical end face seal assembly comprising, in combination, a rigid, abrasion-resistant primary seal ring and an elastomeric, abrasion-resistant secondary seal ring, said primary seal ring being an annular ring having a body which includes first and second axial end face portions and a generally radially inwardly directed, axially extending annular surface portion joining said end portions at their respective inner diameters, a portion of one of said end faces being finished so as to provide, in cooperation with a mating ring, a primary seal band area, said primary ring further includipg a radially outwardly directed annular surface having a tapered portion with the larger diameter portion lying closer to said end face having said seal band area thereon, and including a substantially cylindrical portion lying opposite said end face having said sealing band area thereon, said secondary seal ring being of an annular configuration and having a body with a body center section of substantially circular cross section and including an outer surface adapted in use to roll up and down said tapered surface of said primary seal ring to provide an axial sealing load for said primary ring, said secondary ring further including a substantially cylindrical axial portion formed on an inner diameter thereof and extending axially a distance substantially equal to said substantially cylindrical portion of said primary sealing ring for positioning said secondary seal ring thereon and further including at least one annular positioning rib lying outside said body center section, with said rib including a radially inwardly directed, axially facing shoulder surface adapted to engage said primary ring end face surface opposite said seal band surface in abutting relation to prevent axial movement of said secondary seal ring relative to said primary seal ring during installation of said seal assembly.

4,436,316
FLUID SEAL

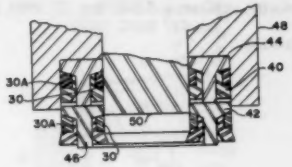
Michael A. Karr, Jr., 9353 Rosstown Way, Houston, Tex. 77080

Filed Apr. 5, 1982, Ser. No. 365,350
Int. Cl.³ F16J 15/16
U.S. Cl. 277—124 **7 Claims**

1. A seal assembly which comprises:

a first seal ring having a geometric axis, said first seal ring having a unitary substantially rigid support member having a cross section which is generally T-shaped, said T-shaped cross section being defined by a hoop shaped section, having inner and outer faces, which is coaxial with said geometric axis and a section of a generally disc shaped section which is also coaxial with said geometric axis; a first annular elastic seal abutting one of said faces; and a second annular elastic seal abutting the other of said faces;

a second seal ring which also has a geometric axis, said second seal ring has a unitary substantially rigid support member having a cross section which is generally T-shaped, the T-shape being defined by a hoop shaped section having inner and outer faces, which is coaxial with said geometric axis, and a section of a generally disc shaped section which is also coaxial with said geometric axis; a first annular elastic seal abutting one of said faces;



and a second annular elastic seal abutting the other of said faces;

said first and said second seal rings and said respective unitary substantially rigid support members thereof are disposed in coaxial and axially abutting relationship;

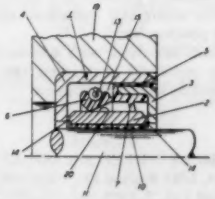
said seal assembly includes a cylindrical housing thereabout which includes a weep hole; and

a hoop shaped backup member extends around the outer circumference of each seal assembly in abutting relationship to one of said annular elastic seals.

4,436,317
CASSETTE SEAL HAVING A COUNTERRING FREE FROM UNRELIEVED INTERNAL STRESS

Wilhelm Schmitt, Heppenheim-Erbach, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Jan. 7, 1983, Ser. No. 456,447
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1982, 3213809
Int. Cl.³ F16J 15/32
U.S. Cl. 277—134 **17 Claims**



1. In a cassette seal compring a U-ring having legs projecting in the direction of a relatively rotating machine part, a counterring connected to the relatively rotating machine part, and at least one sealing lip fabricated from an elastomer material which rests under pretention against the running surface of the counterring extending in the axial direction thereby forming a seal, the improvement which comprises

said counterring is in the shape of a hollow cylinder and is free of unrelieved internal stresses;

said counterring is associated with said legs of said U-ring with a small axial clearance on both sides whereby said counterring and said U-ring enclose a hollow space having substantially rectangular boundaries; and

said sealing lip is mounted on said U-ring and extends into

said hollow space formed by said counterring and said U-ring.

4,436,318

VEHICLE LEVEL DETECTOR WITH FAIL-SAFE MECHANISM

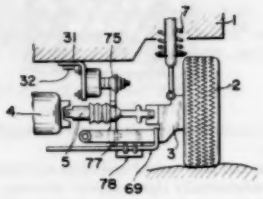
Mamoru Ichikawa, Atsugi, and Sachio Satake, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama and Atsugi Motor Parts Company Limited, Atsugi, both of, Japan

Filed Jul. 16, 1981, Ser. No. 283,795

Claims priority, application Japan, Sep. 27, 1980, 55-134645

Int. Cl.³ B60G *3/14*

U.S. Cl. 280—104 **20 Claims**



1. A vehicle level detector comprising:

a detector housing secured onto a vehicle body for motion therewith;

a stationary transducer element secured with said detector housing;

a movable transducer element disposed within said detector housing in an opposing relationship with respect to said stationary transducer element, said movable transducer element cooperatively producing a first signal indicative of the vehicle body elevation relative to a vehicle suspension member lowered across a first predetermined value and a second signal indicative of the vehicle body elevation relative to said vehicle suspension member raised across a second predetermined; value

a link mechanism connected to said movable transducer element and operating said movable transducer element among the first position where said transducer elements produce said first signal, the second position where said transducer elements produce said second signal and the third position where said transducer elements are in an inoperative position; and

a resilient means associated with said movable transducer element for resiliently positioning said movable transducer element to said third position.

4,436,319

VEHICLE WHEEL SPLASH GUARD

James E. Clutter, 1703 Redbud Ct., Plainfield, Ind. 46168

Filed Oct. 7, 1981, Ser. No. 309,261

Int. Cl.³ B62D *25/16*

U.S. Cl. 280—154.5 R **15 Claims**

1. A vehicle wheel splash guard for mounting to wheeled vehicles so as to partially enclose or cover the tires of such vehicles, said splash guard comprising:

(a) an inner wall having:

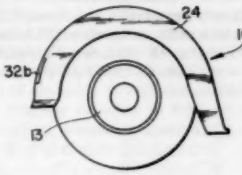
(1) an elongated top portion having longitudinal and transverse edges aligned with and above a corresponding vehicle tire when mounted to a corresponding vehicle;

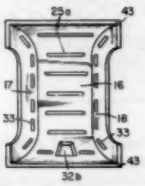
(2) a pair of side portions extending radially inward from the longitudinal edges of said top portion toward the axis of said tire, one side portion adjacent to each side of said tire;

(3) a plurality of first apertures in said top portion which extend generally parallel to the axis of said tire; and

(4) a plurality of second apertures in said side portions running in generally the same direction as the junctions of said top and side portions; and

(b) an outer wall located on the opposite side of said inner wall from said tire and cooperatively arranged to reduce





splash and spray from said tire, said outer wall being joined to said inner wall at the radially inward edges of said side portions, said jointed location being sealed to substantially prevent leakage of fluids therethrough.

4,436,320

CHASSIS FOR INVALID WHEELCHAIRS

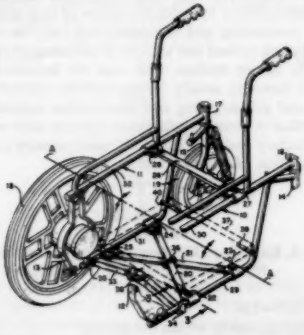
Uwe Brudermann, Heikendorf; Karl-H. Kunze; Gunter Krehl, both of Kiel; E. Volker Linde, Klausdorf, and Dieter R. Lorenz, Kiel, all of Fed. Rep. of Germany, assignors to Everest & Jennings, Inc., Camarillo, Calif.

Filed Apr. 30, 1982, Ser. No. 373,740

Claims priority, application Fed. Rep. of Germany, May 7, 1981, 31118112

Int. Cl.³ B62M *1/14*

U.S. Cl. 280—242 WC **9 Claims**



1. A chassis for invalid wheelchairs including, in combination:

(a) left and right lateral frames for rotatably supporting at their forward and rear ends front and rear wheels respectively, said lateral frames lying in spaced generally vertical parallel planes;

(b) first and second connecting members arranged in a cross,

lying generally in an horizontal plane between said vertical parallel planes, the extending ends of said members being attached to said lateral frames; and

(c) a third connecting member extending horizontally between and attached to said lateral frames in a position spaced above said horizontal plane, said third member being normal to said vertical planes, so that when said chassis is viewed from the side, at the most only two frame mounting points fall on a straight line, said first, second and third connecting members constituting leaf springs providing an elastic connection between the lateral frames permitting slight rotations of the frames in their own planes about an horizontal axis, the attachment points of said members to said lateral frames permitting further elastic relative movements between said lateral frames.

4,436,321

ELECTRICALLY RELEASABLE SAFETY SKI BINDING

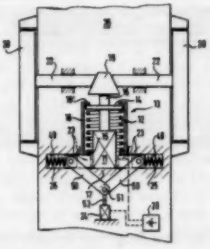
Ralf Storandt; Georg Scheck, and Peter Biermann, all of Leonberg, Fed. Rep. of Germany, assignors to Geze GmbH, Fed. Rep. of Germany

Filed May 7, 1981, Ser. No. 261,496

Claims priority, application Fed. Rep. of Germany, May 9, 1980, 3017841

Int. Cl.³ A63C 9/085

U.S. Cl. 280—612 22 Claims



1. An electrically releasable safety ski binding comprising a fixed binding part; retaining means for releasably retaining a ski boot in the binding; a battery operated power supply; electrical measuring sensor means for sensing the load on a skier's leg; a signal former connected to said electrical measuring sensor means for forming a release signal when said load reaches a predetermined value; a release mechanism including an electromagnetic converter, wherein said electromagnetic converter is responsive to said release signal to release said retaining means for movement away from said ski boot; a normally inoperative release spring associated with said release mechanism, said release spring having first and second ends; and means for placing said release spring in an operative state on failure of said power supply; wherein, in said operative state, said release spring is disposed operatively in parallel with said electromagnetic converter, with said first end being braced against a fixed housing part and said second end bearing on said release mechanism; and wherein said release spring is arranged to yield in said operative state to permit release of said binding once a predetermined release setting is reached.

4,436,322

LOCKING MECHANISM

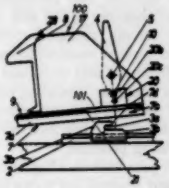
Heinz Wittmann, and Vladimir Konwitza, both of Vienna, Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Oct. 27, 1981, Ser. No. 315,393

Claims priority, application Austria, Oct. 28, 1980, 5303/80; Feb. 4, 1981, 501/81

Int. Cl.³ A63C 9/08

U.S. Cl. 280—614 14 Claims



1. A safety ski binding for use in cross-country skiing and downhill skiing, comprising:

a cross-country plate having a bearing block thereon adjacent the rear portion thereof to which a heel holder is supported;

locking means for facilitating a locking of at least the rear portion of said cross-country plate to said ski, said locking means having a locking element which, in the locked position of said cross-country plate, is received in an opening through said cross-country plate, said locking means further including a slide member movably supported on said cross-country plate and being movable between a first position operatively engaging said locking element to lock said cross-country plate to said ski and a second position free of engagement with said locking element to unlock said cross-country plate from said ski, said locking means further including an elongated rail fixed to said ski and means on said rail and said locking element for movably guiding said locking element along the length of said rail; and

lever means for effecting a movement of said slide member between said first and second positions.

4,436,323

LOCKING DEVICE FOR A MOVING ANCHOR OF A SEAT BELT

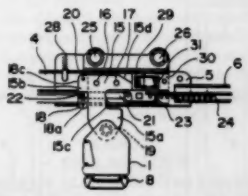
Kazuo Yamamoto, Sagamihara, Japan, assignor to NSK-Warner K.K., Japan

Filed Jul. 30, 1982, Ser. No. 403,406

Claims priority, application Japan, Sep. 3, 1981, 56-130376[U]

Int. Cl.³ B60R 21/10

U.S. Cl. 280—804 5 Claims



1. A locking device for a moving anchor used in an automatic seat belt system, having:

an anchor member movable between a rearward, seat occupant restraining position and a forward, seat occupant liberating position along a guide member secured to a vehicle body;

a pivotable member pivotably mounted on said anchor member;

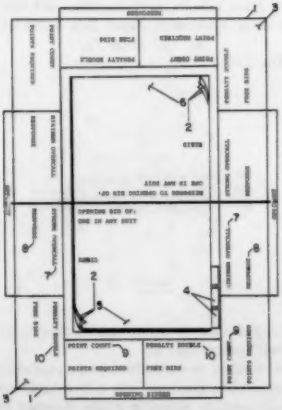
a driving member operatively connected to said pivotable member so as to pivotally move said pivotable member between a first position and a second position, said driving member moving said pivotable member to said first position when said driving member is moved from the seat occupant liberating position toward the seat occupant restraining position in response to the closing of a door and thereafter moving said pivotable member and said anchor member together to the seat occupant restraining position, said driving member moving said pivotable member to said second position when said driving member is moved from the seat occupant restraining position toward the seat occupant liberating position in response to the opening of the door and thereafter moving said pivotable member and said anchor member together to the seat occupant liberating position;

a locking member provided on a base member secured to the vehicle body and adapted for movement between a locking position at which the locking member prevents the movement of said anchor member to the seat occupant liberating position and a non-locking position at which the locking member permits movement of said anchor member to the seat occupant liberating position; and

a biasing member biasing said locking member toward said locking position;

at least one of said pivotable member and said anchor member forming a locking surface engageable with said locking member in its locking position when said anchor member is in said seat occupant restraining position and said pivotable member is in said first position in order to prevent movement of said anchor member to said seat occupant liberating position, said locking member being located forwardly of said locking surface when said anchor member is in said seat occupant restraining position, and said pivotable member in said second position forming a cam surface which moves said locking member to its non-locking position when said anchor member and said pivotable member are about to be moved from the seat occupant restraining position toward the seat occupant liberating position by said driving member.

4,436,324
BRIDGE BIDDING AID
Lyndon O. Barton, 26 Shull Dr., Newark, Del. 19711
Filed Aug. 5, 1981, Ser. No. 290,310
Int. Cl.³ G09B *19/22;* **A63F** *3/00*
U.S. Cl. 283—50 **4 Claims**



1. A booklet having an oversized cover and a plurality of sheets, devised to aid bridge players in bidding situations, wherein

a. said sheets and said cover are permanently secured to a spine, and contain notes so arranged that, when said booklet is unfolded, four players seated around a table can simultaneously and independently consult said notes to decide on their respective bids,

b. said oversized cover has a portion extending beyond said sheets such that when said booklet is unfolded, said extended portion forms a border around said sheets,

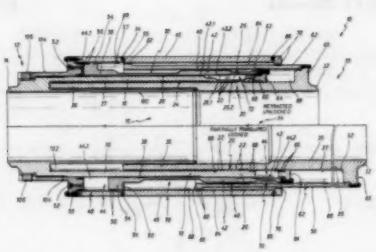
c. said notes contained on said sheets are so arranged that, when said booklet is unfolded, the notes relating to the opening bidding sequence are positioned typically on one page and face, or are readable only by, the opening bidder, while the notes relating to the response bidding sequence are positioned typically on the opposite page and face, or are readable only by, the responder,

d. said notes contained on said cover are recorded on said extended portion and arranged such that, when said booklet is unfolded, they directly face each player,

e. said notes on said sheets and said cover facing each player are in immediate proximity to each player,

f. said booklet when unfolded and placed on a level surface will permit said sheets to be maintained in a flat and stable position.

4,436,325
COUPLING
Jack E. Miller, Houston, Tex., assignor to Big Inch Marine Systems, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 214,251, Dec. 8, 1980, abandoned. This application Nov. 16, 1981, Ser. No. 320,889
Int. Cl.³ F16L *55/00, 37/18, 25/00;* **F16J** *15/00*
U.S. Cl. 285—18 **50 Claims**



1. A coupling for coupling two tubular elements in sealed relationship, the coupling comprising:

(a) a first tubular member having an outer end for connection to one tubular element, and having an inner end comprising an axially extending locking sleeve, the locking sleeve having an annular gripping zone defined by the locking sleeve having at least one annular gripping member along its inner surface in the gripping zone, having cam means along its outer surface in the gripping zone, and by the locking sleeve being radially compressible in the gripping zone;

(b) a second tubular member having an outer end for connection to another tubular element, and having an inner end comprising an inner barrel located within the locking sleeve;

(c) an annular locking piston which surrounds the gripping zone, the locking piston being axially displaceable relatively to the first tubular member between an inoperative position and an operative locking position, and the locking piston having a locking zone with complementary cam means along the inner surface of the piston in the locking zone to cooperate with the cam means of the gripping zone in the operative position of the piston to radially compress the gripping zone and thus compress the annular

gripping member into sealing engagement with the inner barrel to lock the coupling;

(d) the locking piston being positioned to define a compression chamber in the coupling for receiving a compression fluid under pressure to displace the piston into its operative position, the compression chamber extending through between the cam means and the complementary cam means for compression fluid pressure within the compression chamber to resiliently expand the locking zone relatively to the gripping zone to reduce interference between the cam means and complementary cam means during translation of the piston into its operative position.

4,436,326

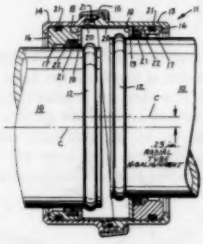
FLEXIBLE COUPLING FOR FLUID DUCTS

Bertram A. Peaster, Marietta, Ga., assignor to Lockheed Corporation, Burbank, Calif.

Filed Jul. 13, 1981, Ser. No. 282,760

Int. Cl.³ F16L *55/00*

U.S. Cl. 285—178 **7 Claims**



1. A flexible coupling for fluid ducts when disposed end to end comprising:

a pair of coupling half assemblies, one adapted to overlie and surround each of said duct ends, at least one of said assemblies including an insert having an eccentric opening for the passage therethrough of the associated duct end and each of said assemblies having an engagement complemental to the engagement of the other assembly;

a connector operative on said engagements to thereby secure them one to the other against relative movement;

a ring spacer having an overall diameter substantially equal to the internal diameter of said coupling half assemblies;

a pair of discs, each provided with a central eccentric opening substantially equal in diameter to the external dimension of each respective one of said duct ends for the passage therethrough of said one duct end, one of said discs being disposed between each said coupling half assembly and said ring spacer; and

a seal between each coupling half assembly and the associated disc.

4,436,327

CLAMP JOINT FOR PIPES

Rudolf Schaefer, Brauerstrasse 35, D-4100 Duisburg 1, Fed. Rep. of Germany

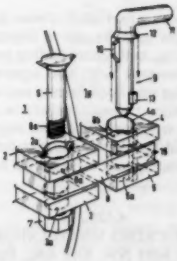
Filed Aug. 20, 1981, Ser. No. 294,562

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1980, 3031314

Int. Cl.³ F16L *23/00, 19/00, 25/00*

U.S. Cl. 285—364 **9 Claims**

1. Clamp joint for axially clamping together the end faces of first and second coaxial cylindrical members having identical diameters, said clamp joint comprising: at least one first projection secured to the first member near the end face thereof and at least one second projection secured to the second member near the end face thereof, each projection projecting substantially radially outwardly from its associated member, and lying in a plane parallel to the common longitudinal axis of the members, said second projection being provided with a bore whose axis is transverse to the common longitudinal axis of the members; a connecting part articulated to said first projection, extending axially from the first member to the region of said second projection and lying in a plane parallel to the common longitudinal axis of the members, said connecting part being provided with a first bore whose axis is transverse to the common longitudinal axis of the members and located to be aligned with said bore in said second projection when the end faces of the members are in proximity to one another; and a first bolt arranged to be inserted into said first bore in said connecting part and said bore in said second projection in the direction of the axes of said bores, said first bolt being provided with a laterally projecting eccentric portion extending along a selected region of its length to engage one of said bores when said first bolt is inserted therein; with said one of said bores having a diameter which corresponds to the diameter of said first bolt and the lateral extent of said projecting eccentric portion and the other of said bores having a diameter which is smaller than that of said one of said bores and which corresponds to the diameter of said first bolt outside of said selected region of its length, and wherein said first projection is provided with a bore whose axis is transverse to the common



longitudinal axis of the members, and said connecting part is provided with a second bore whose axis is transverse to the common longitudinal axis of the members and which is aligned with said bore in said first projection, and further comprising means articulating said connecting part to said first projection, said means being composed of a second bolt arranged to be inserted into said second bore in said connecting part and said bore in said first projection in the direction of the axes of those bores, said second bolt being provided with a laterally projecting eccentric portion extending along a selected region of its length at a location such that when said second bolt is inserted into said bore in said first projection and said second bore in said connecting part, said projecting eccentric portion of said second bolt engages one of said bores into which said second bolt is inserted, with said bore which is engaged by said projecting eccentric portion of said second bolt having a diameter which corresponds to the diameter of said second bolt and the lateral extent of said projecting eccentric portion of said second bolt, and the other of said bores into which said second bolt is inserted having a diameter which is smaller than that of said bore which is engaged by said projecting eccentric portion of said second bolt and which corresponds to the diameter of said second bolt outside of said selected region of its length.

4,436,328

KEYLESS LOCK

John E. Chernosky, 5 Malcolm St., West Babylon, N.Y. 11704

Filed Feb. 22, 1982, Ser. No. 351,288

Int. Cl.³ E05C *5/02*

U.S. Cl. 292—67 **5 Claims**

1. An improved keyless lock which comprises:

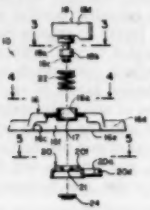
(a) a helical spring;

(b) a rectangular housing having a plurality of mounting

holes, a recessed central square aperture surrounded by an annular lip on top, a slot in a long side wall and an open bottom;

(c) a latch consisting of a round portion having a square aperture, a tongue on the one side and a corner stop on other side;

(d) a latch release having a finger grip handle and a shaft with a square mating portion placed through said helical spring, said square aperture in said housing and said square aperture in said latch so that said finger grip handle is in line with said tongue of said latch;



(e) means for fastening said latch release to said latch so that when said finger grip handle is depressed compressing said helical spring, said square mating portion of said latch release will disengage with said square aperture of said housing allowing said latch release and said latch to rotate to a locked position through said slot in said long side wall of said housing whereby said corner stop engages the solid long wall of said housing preventing further rotation; and

(f) means for mounting said rectangular housing to a frame.

4,436,329

LOCKING MECHANISM

Thomas J. Metzger, 6501 NW. 87th Ave., Parkland, Fla. 33067

Filed Feb. 23, 1982, Ser. No. 351,339
Int. Cl.³ E05C *1/06*
U.S. Cl. 292—150 **4 Claims**

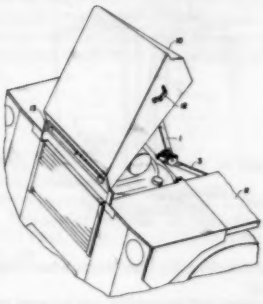
1. A locking mechanism for a sliding window or door of the type having an inner transparent pane mounted to a rectangular inner frame and an outer surrounding rectangular frame mounted to a wall, said locking mechanism being incorporated within one side of said inner frame and comprising a slide, a latch adapted to move and lock said slide, a deadbolt attached to said slide and adapted to extend into said outer frame to lock said frames together, said inner frame defining a latch port adjacent said latch, said latch port comprising a wider locking segment and a narrower adjacent unlocking segment, said latch comprising a latch post, a latch button, a latch casing, and a latch spring, said latch post being coupled to said slide and extending therefrom to said latch port, said latch button being slideably mounted on said latch post and defining a raised button portion and a lower button portion, and latch spring surrounding said latch post between said latch button and said slide, so that said raised button portion will extend through said locking segment when said latch button is manipulated to move said slide to engage said deadbolt with said outer frame, said latch spring maintaining said raised button portion in said locking segment until said latch button is depressed, said latch casing being positioned between said slide and said latch port, said casing surrounding said latch button and defining slot means for passage of said latch bolt between said latch button and said slide, said latch casing being adapted to prevent excursion of said latch button and said slide beyond said latch port within said inner frame.

4,436,330

FOLDING SUPPORT WITH DOUBLE-POSITIVE LOCK

Henry C. Mayo, Alexandria, and Joseph E. Korzendorfer, Manassas, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 4, 1981, Ser. No. 327,530
Int. Cl.³ E05C *17/32*
U.S. Cl. 292—263 **9 Claims**



1. A folding support assembly which opens to hold a supported object a predetermined distance from a supporting object having a first arm with a slot at one end, a second arm having a first end and a second end, said first end being pivotally connected to one of said supporting object and said supported object, and having a bracket assembly extending from the second arm mounted along the length of the second arm between the first and second ends of the second arm, a pin mounted in the bracket assembly, wherein the first arm is connected to the second arm at the bracket assembly such that the pin of the second arm extends through the slot of the first arm and the first arm is pivotable about the pin, and further having:

a latch assembly positioned on the second arm on said second end which locks the pivotable movement of the first arm when the support assembly is in an open position.

4,436,331

MULTIPLE-POSITION HASP-TYPE DOOR CHECK

Howard E. Glickman, 4 Nantucket La., Olivette, Mo. 63132; Alan J. Broddon, 7400 Buckingham, Clayton, Mo. 63105, and Norman C. Broddon, 10984 Chambray Ct., Creve Coeur, Mo. 63141

Filed Nov. 9, 1981, Ser. No. 319,220
Int. Cl.³ E05C *17/16*
U.S. Cl. 292—270 **5 Claims**

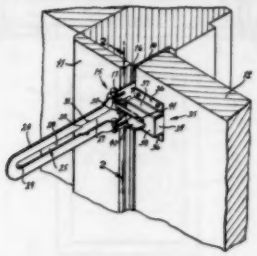
1. A door check of the type having, for affixing to the inner surface of a door jamb, a hasp hinged on a fixed vertical axis, the hasp being elongated and having perpendicular to said axis an elongated slot terminating at the hinge axis in an enlarged yoke-like opening, the door check further having, for affixing to the inner surface of a door, a slide-supporting member from which a headed slide member projects horizontally parallel to

such door surface, for reception within the opening of the hasp for sliding within its slot, characterized in that:

A. the slot has, continuing from the yoke-like opening, a broader slot portion extending to a shoulder-like junction, from which a narrower slot portion continues, and

B. the slide member has a deeper portion slidable within the broader slot portion and a shallower slide portion alternatively slidable within the narrower slot portion, and terminates in a head whose depth is less than such yoke-like opening and greater than either said slot portions,

whereby by moving the hasp on its hinge and on fitting the slide member head through the yoke-like opening, a person inside the door may select between the extent of opening permitted by the said two slot portions.



4,436,332

MOP HEAD INSTALLATION TOOL

Elmer L. Ellison, 1157 N. 33rd St., Springfield, Oreg. 97477

Filed Aug. 3, 1981, Ser. No. 289,394

Int. Cl.³ A47L *13/25*

U.S. Cl. 294—1 R **2 Claims**

1. A hand held tool for temporary engagement with and manually stretching fabric mop heads during installation of same on elongate mop frames, said tool comprising,

a handgrip, and

a guide structure of semi-circular section integral with one end of said handgrip, said guide structure including a lip remote from the handgrip and adapted for temporary inserted engagement with one end of a mop head, said guide structure including a curved surface area along which one end of the mop frame may slide into inserted engagement with that portion of the mop head temporarily engaged by said lip of the guide structure.

4,436,333

HAND OPERATED HOIST HAVING IMPROVED MEANS CONTROLLING FREE ROTATION OF A LOAD SHEAVE

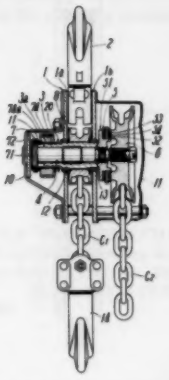
Kinji Tsuda, Osaka, Japan, assignor to Elephant Chain Block Company Limited, Osaka, Japan

Filed Apr. 2, 1981, Ser. No. 250,157

Claims priority, application Japan, Apr. 1, 1980, 55-43130

Int. Cl.³ B66D *1/04*

U.S. Cl. 294—82 R **5 Claims**



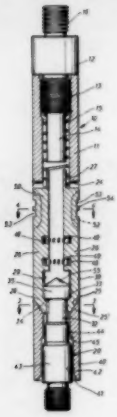
1. A hand-operated hoist comprising a hoist body, means for hanging said body, a sheave shaft having a load sheave supported rotatably to said body, power operation means for driving said sheave shaft, and control means for permitting rotation of said sheave shaft, said power operation means comprising a drive shaft, a rotatably driven hand wheel driven by an endless chain, said hand wheel being coupled with said drive shaft by screw means, a mechanical brake for locking reverse rotation of said sheave shaft and for transmitting a driving force from said hand wheel when it rotates in a driving direction to said drive shaft, and a reduction gear mechanism comprising a plurality of gears through which the driving force from said hand wheel is reduced in speed and transmitted to said sheave shaft, said drive shaft being supported to said sheave shaft so as to be axially movably with respect thereto and having an urging member for urging said hand wheel toward said mechanical brake, so that when said hand wheel is unscrewed by being rotated reversely to said driving direction, when said load sheave bears no load, said drive shaft axially moves in a first direction under the action of said urging member and at least one of the gears of said reduction gear mechanism axially moves in said first direction to follow axial movement of said drive shaft, said control means including a clutch mechanism which functions upon axial movement of said gear following axial movement of said drive shaft to disengage and interrupt the driving force transmitted to said sheave shaft thereby allowing said sheave shaft to freely rotate, said at least one gear being provided with a spring means for biasing said clutch mechanism in a disengaging position so that when said hand wheel is rotated reversely the axial movement of said gear following said drive shaft in said first direction causes said spring means to operate to disengage said clutch mechanism permitting free rotation of said load sheave, and means for axially forcibly moving said driving shaft and said gear in a second direction opposite the first upon relative rotation of said hand wheel with respect to said driving shaft when said hand wheel is changed in rotational direction from a reverse rotation direction to said driving direction.

4,436,334

RELEASING OVERSHOT APPARATUS

Lloyd C. Rathburn, Friendswood, Tex., assignor to Loomis International Inc., Pasadena, Tex.

Filed Oct. 19, 1981, Ser. No. 312,770
Int. Cl.³ E21B *31/12*
U.S. Cl. 294—86.3 **11 Claims**



8. A retrieving apparatus comprising: a tubular body having oppositely disposed longitudinally extending slots in the wall thereof, each of said slots having an inclined surface at its lower end; an elongated gripping member carried in each of said slots and being movable longitudinally and laterally with respect thereto; first resilient means reacting between said body and said gripping members for urging the lower end portions thereof into engagement with said inclined surfaces to cause said lower end portions to move inwardly to a gripping position; second resilient means reacting between central portions of said gripping members and urging said central portions laterally outward whereby inward pressure on the upper end portions thereof can be employed to pivot said gripping members about said central portions to cause outward movement of said lower end portions to a released position; and means projecting from the upper end of each gripping member for limiting outward movement with respect to said body, said first resilient means being constituted by a coil spring having its lower end section received over said limiting means.

4,436,335

APPLIANCE SUPPORTS

Charles J. Yoos, 39182 S.R. 517, Lisbon, Ohio 44432

Filed Jan. 11, 1982, Ser. No. 338,254
Int. Cl.³ B60N *3/10*
U.S. Cl. 296—24 R **6 Claims**

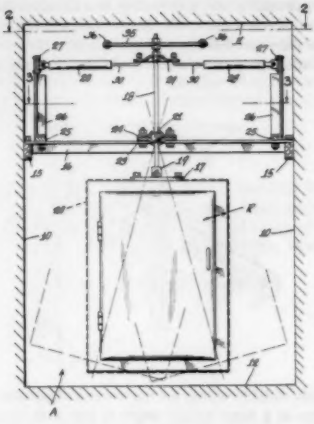
1. A support for a refrigerator housed in a travel trailer, comprising:

support means rigidly connected to a surface of said trailer and disposed above a floor space of said trailer a distance greater than the height of said refrigerator,

a rod rigidly secured to said refrigerator and extending upwardly therefrom to said support means,

a ball and socket connection between the refrigerator rod and said support means thereby to suspend said refrigerator and permit it to swing to level condition when said travel trailer is in any tilted position,

a plurality of dash pots having the cylinders and rods thereof respectively interconnected between said refrigerator rod and a laterally adjacent surface of the trailer with said dash pots in angular spaced relation about the axis of said refrigerator rod, thereby to dampen oscillation movements of said refrigerator and refrigerator rod, and,



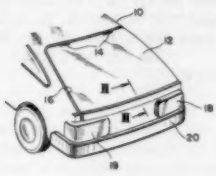
means connected to said rod and to a wall of said trailer to restrain movement of said refrigerator rod about its longitudinal axis, thereby to prevent said refrigerator from excessively rotating during any tilting movement.

4,436,336

HATCHBACK DOOR OF A MOTOR VEHICLE

Tetsuo Shimizu, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 3, 1981, Ser. No. 317,772
Claims priority, application Japan, Dec. 3, 1980, 55-173365[U]
Int. Cl.³ B62D *25/00*
U.S. Cl. 296—76 **3 Claims**



1. A hatchback door assembly for a vehicle comprising:

a hatchback door of glass hinged at its one edge portion to the vehicle body to be swingable upward and downward relative to the vehicle body to open and close a door opening formed in said vehicle body;

an elongate strip of flexible elastic material which is attached to the other edge portion of said door in a manner to extend along the entire of the other edge portion and to cover at least the extreme edge of same, said elongate strip including a main-portion covering the outside surface of the other edge portion and a sub-portion straddling the extreme edge of the other edge portion to cover the inside surface of the other edge portion;

an elongate retainer embedded in the main-portion of said strip to extend along the length of said strip; and

bolts and nuts for securing said strip to said glass door, each bolt being secured to said retainer and extending therefrom to be inserted in the corresponding hole formed in the glass door having its leading end projected from the inside surface of the glass door, each nut being screwed to

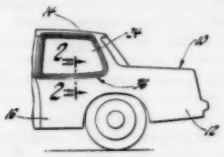
the projected end of the corresponding bolt to assure the connection of the strip to said glass door.

4,436,337

VEHICLE BODY MOLDING ASSEMBLY

Laurence B. Bowes, Utica, and Thomas J. Gray, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 2, 1982, Ser. No. 404,562
Int. Cl.³ B62D 25/02
U.S. Cl. 296—201 3 Claims



1. A vehicle body reveal molding assembly comprising, in combination,

an elongated body member of angular cross-section for abutting a complementary shaped portion of a vehicle body panel,

an angular cross-section molding attachment portion extending outwardly of the plane of the body member,

means integrally attaching opposite end edges of the attachment portion to the body member,

the body member including an opening therethrough underneath each side edge of the attachment portion,

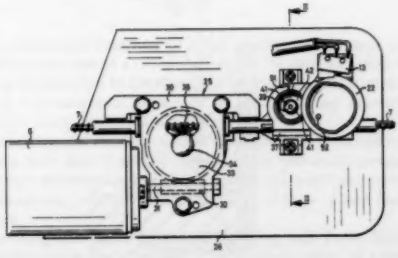
and an elongated molding of angular cross-section having side edge portions provided with elongated terminal flanges reversely bent underneath the molding, the edge portions and flanges overlying and concealing the openings in the body member underneath each side edge of the attachment portion, and seating on the body member to each side of each opening, the flanges edgewise engaging the side edges of the molding attachment portion to releasably secure the molding to the body member.

4,436,338

OPERATING MECHANISM FOR A TILTABLE SLIDING COVER

Hans Jardin, Inning, Fed. Rep. of Germany, assignor to Webasto-Werk W. Baier GmbH & Co., Munich, Fed. Rep. of Germany

Filed Feb. 17, 1982, Ser. No. 349,530
Int. Cl.³ B60J 7/04
U.S. Cl. 296—223 12 Claims



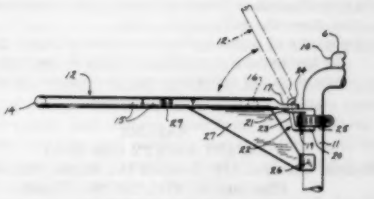
1. An operating mechanism for a tiltable sliding cover of a roof of a motor vehicle having an electric motor by means of which the sliding cover can be operated via a transmission, at least one threaded cable and a cover-adjusting unit connected with the threaded cable, and having a switching arrangement that is in operating connection with the cover-adjusting unit and is rendered operative as a function of the position of the cover-adjusting unit, said switching arrangement switching off current supply to the electric motor in a position of the cover-adjusting unit that corresponds to a closed position of the sliding cover, wherein, between the cover-adjusting unit and the switching arrangement, a clutch means is provided for interrupting the operating connection between the cover-adjusting unit and the switching arrangement.

4,436,339

LAP DEVICE FOR WHEELCHAIR PATIENTS

Arthur L. H. Albers, 1916 Green Bay Rd., Grafton, Wis. 53024

Filed Oct. 16, 1981, Ser. No. 311,996
Int. Cl.³ A47B 83/02
U.S. Cl. 297—153 1 Claim



1. In combination with a wheelchair having a seat with a front edge, a back, armrests set back from the said front edge of said seat, and vertical bracing members extending downwardly from the front terminus portions of said armrests:

(a) a lap device for positioning in front of the patient,

(b) coupling means for removably attaching the rear portion of said lap device to said vertical bracing members below the plane of said armrests,

(c) said coupling means being constructed to respectively connect or disconnect said lap device from said vertical bracing members by arcuate downward or upward pivoting of said lap device rear portion about a transverse horizontal axis extending between said bracing members, said coupling means comprising:

(1) coupling assemblies secured to said vertical bracing members,

(2) said coupling assemblies each including a base, an upper lip, and a hook having an upwardly forwardly inclined body portion which merges at its upper end into a rearwardly bent tail,

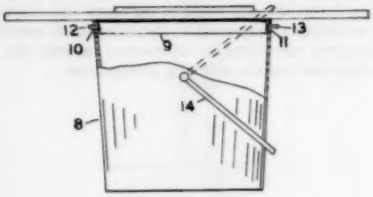
(3) and opening means formed in the rear corner of said lap device for being received over said hooks,

(4) said tails forming means to confine said rear corners against said upper lips when said lap device is in its lowered coupled position,

(d) and stabilizing locator means connected to said lap device and engageable with said bracing members upon downward pivoting of said lap device,

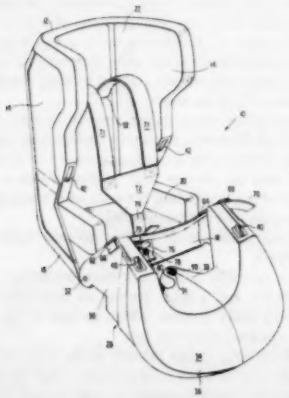
(e) the said opening means of said lap device being automatically movable over said hook tails upon forward tipping of the wheelchair to the floor to thereby automatically decouple said frame from the wheelchair.

4,436,340
FISHING SEAT, ROD HOLDER AND PAIL
Henry Hernandez, 1085 Admont Ave., Franklin Square, N.Y. 11010
Filed Jul. 27, 1981, Ser. No. 287,188
Int. Cl.³ A47C 9/00
U.S. Cl. 297—193 2 Claims



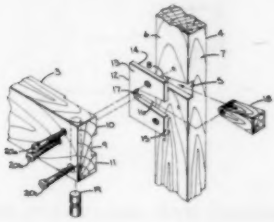
1. A combined fishing seat, rod holder and pail, comprising:
an elongated horizontal seat member,
a pail positioned under said seat, a pair of holes in the side of the pail along a diameter,
a mounting member fixedly connected to the underside of the seat and adapted to fit into the pail,
a pair of extension members extending from the ends of the mounting member, the extension members being adapted to fit into the holes in the pail,
a pair of members hinged to the elongated seat member so as to cover the pail opening, and
a plurality of mounting holes mounted adjacent the ends of the horizontal seat member whereby fishing rods, warning indicators and containers may be mounted in said holes.

4,436,341
INFANT SAFETY CAR SEAT
Maurice Converse, 1311 Briarhill Dr., Akron, Ohio 44313
Filed Jun. 22, 1981, Ser. No. 276,300
Int. Cl.³ A47C 1/08
U.S. Cl. 297—250 5 Claims



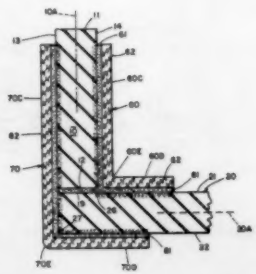
1. A safety car seat of the type used for infants and adapted to rest on and be releasably secured to a conventional automobile seat comprising bottom, seat, back and side portions integrally secured together, a front portion comprising a rigid cross member fixed above said seat portion and a crotch portion extending downwardly from said cross member to said seat portion to define a pair of leg openings, means detachably connecting said cross member to said side portions, infant harness means including shoulder portions and a crotch portion, means for connecting said shoulder portions to said back portion and quick release means for detachably connecting said crotch portion of said harness portion to said seat portion and said crotch portion of said front portion.

4,436,342
FURNITURE JOINT ASSEMBLY
Warren C. Nilson, Omro, and Thomas L. Rabe, Oshkosh, both of Wis., assignors to The Buckstaff Company, Inc., Oskosh, Wis.
Filed Nov. 2, 1981, Ser. No. 317,499
Int. Cl.³ A47C 1/12
U.S. Cl. 297—445 14 Claims



1. A joint assembly in an article of furniture comprising:
a first elongated furniture component having a surface and having a wedge shaped groove extending inwardly along said surface of said component,
a second elongated furniture component connected to said first component such that the longitudinal axes of said components are substantially perpendicular to each other and one of said longitudinal axes lies in a substantially vertical plane and said second component having a surface, said surface having a wedge shaped groove extending inwardly along said surface, said wedge shaped grooves in said first and second furniture components having substantially equal dimensions and being in alignment, said grooves in said first and second components cooperating to define a wedge receiving recess located along the surface formed by the joining of said first and second components, and
a wedge member disposed within said wedge receiving recess.

4,436,343
FRAMELESS FOAM BASE FOR UPHOLSTERED SEATING FURNITURE AND METHOD
Charles Schneider, 314 South 67th St., Omaha, Nebr. 68132
Filed Nov. 20, 1981, Ser. No. 323,190
Int. Cl.³ A47C 7/18, 7/24
U.S. Cl. 297—456 12 Claims



1. Foam base for furniture seating comprising a plurality of

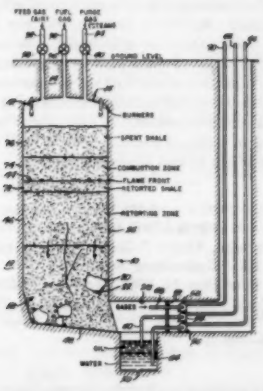
angularly intersecting panels of low-density resiliently-compressive foam material, said plurality of foam panels including a spaced apart pair of upright arm-panels and at least one intersecting-panel, each upright arm-panel including a non-vertical top-edge and a pair of upright surfaces including an outward-surface remote from the intervening-panel and an inward-surface closer to the intervening-panel, the angularity between each upright arm-panel and the intervening-panel being maintained with opposed angular stiffener connections including an internal-angle connector and an external-angle connector located respectively at the interior-angle and at the exterior-angle formed by each arm-panel and an intervening panel, each angular stiffener connection being provided by flexible fabric sheeting adhered to the arm-panel and to the intervening-panel, said adhesively attached fabric sheeting being of low permeability to airflow so to also, in addition to providing angularity maintenance means, provide a barrier to airflow whereby the arm-panel is resistent to decompression whenever the furniture occupant bears his weight against the arm-panel, and each said internal-angle connector being wholly relegated in elevation a finite distance below the armresting top-edge of the upright arm-panel so as to enhance comfort to the seated occupant's arm resting downwardly thereagainst.

4,436,344

IN SITU RETORTING OF OIL SHALE WITH PULSED COMBUSTION

John M. Forgac, Elmhurst, Ill., and Gerald B. Hoekstra, deceased, late of South Holland, Ill. (by Edith Hoekstra, executrix), assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed May 20, 1981, Ser. No. 265,687
Int. Cl.³ E21B *43/243*; E21C *41/10*
U.S. Cl. 299—2 **24 Claims**



1. A process for retorting oil shale, comprising the steps of:

heating a portion of a rubblized mass of oil shale to a retorting temperature to liberate shale oil and off gases containing hydrocarbons from said oil shale leaving retorted shale containing residual carbon;

combusting said residual carbon in said oil shale in a combustion zone behind said retorting zone in said underground retort with a flame front fed by a feed gas, said flame front advancing generally in the direction of flow of said feed gas;

quenching said flame front by blanketing said flame front with a purge gas consisting of stripped recycled off gases and subsequently reigniting said flame front while continuing to liberate shale oil and off gases containing hydrocarbons in said retorting zone;

withdrawing said liberated shale oil and off gases containing hydrocarbons from said underground retort;

stripping said hydrocarbons from said off gases; and

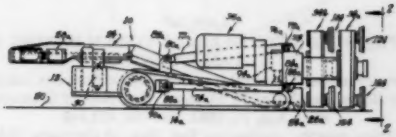
recycling said stripped of gases to said retort for use as said purge gas.

4,436,345

CONTINUOUS MINING MACHINE HAVING CONTOUR CUTTERS

Walter Silks, Downers Grove, and Joseph Gonski, Oak Lawn, both of Ill., assignors to Goodman Equipment Corporation, Chicago, Ill.

Filed Aug. 26, 1981, Ser. No. 296,497
Int. Cl.³ E21C *27/24*
U.S. Cl. 299—59 **32 Claims**



1. A rotary boring head for use in a continuous boring operation or the like comprising:

a primary cutter head having a longitudinal axis defining a first rotational axis and being operative to rotate and cut a bore of predetermined transverse cross-sectional configuration in a mine face or the like when advanced thereagainst while rotating about said first rotational axis,

at least one contour cutter carried by said primary cutter head about said first rotational axis as said primary cutter head rotates, said contour cutter being rotatable about a second rotational axis parallel to and spaced from said first rotational axis and in predetermined timed relation to the rotation of said primary cutter head,

said contour cutter having at least one cutter tooth thereon operative to cut selected circumferentially spaced areas radially outwardly of the bore cut by said primary cutter head during said rotation of said primary cutter head and said contour cutter in said predetermined timed relation so as to enlarge said bore and give it a cross-sectional shape approximating a square,

and means for rotating said primary cutter head and said contour cutter in said predetermined timed relation.

4,436,346

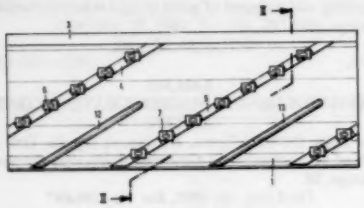
CUTTING ROLLER FOR A MINING MACHINE

Gerd Best, Sprockhövel, and Norbert B. Weikert, Dortmund, both of Fed. Rep. of Germany, assignors to Krampe & Co. Fertigung in Bergbaubedarf GmbH, Hamm, Fed. Rep. of Germany

Filed Jan. 19, 1982, Ser. No. 340,724
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1981, 3105732
Int. Cl.³ E21C *25/10*
U.S. Cl. 299—87 **13 Claims**

1. A cutting roller for a mining machine, comprising a tubular body member having a longitudinal central axis, an end nearer the workings and a discharge end; a closure member adjacent said end nearer the workings and arranged to face the workings; at least two blades helically extending along an outer surface of the body member parallel one to another to form a space therebetween; and at least one charging coil on said body member mounted in said space, said charging coil extending only over a part of the length of the tubular body member in a direction of said longitudinal axis, said charging coil extending along said outer surface parallel to said blades,

said blades and charging coil extending about said outer surface with an equal angle of inclination, and wherein said charging coil has its largest size in a radial direction at said discharge end of the tubular body member.



4,436,347

PRESSURE MEDIUM BRAKE SYSTEM HAVING A DUAL-VALVE CONTROL

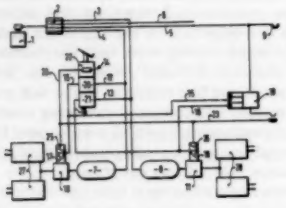
Werner Stumpe, Kornwestheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 24, 1982, Ser. No. 411,140

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204185

Int. Cl.³ B60T *15/18*

U.S. Cl. 303—6 R **4 Claims**



1. A pressure-medium brake system for vehicles having at least two brake circuits, each of said brake circuits having its own source of pressure-medium, and each having one relay valve, said brake circuits controlled by a multi-circuit service brake valve, said multi-circuit service brake valve being in a line extending to control chambers associated with each of said relay valves, said control chambers arranged to control a braking medium, characterized in that said sources of pressure medium supplies a control for each of said relay valves and a working medium for actuation of the brake circuit and further that an electrical supply means for additional control of said relay valves is provided at said multi-circuit service brake valve.

4,436,348

ANTI-SKID HYDRAULIC BRAKING SYSTEMS FOR VEHICLES

Glyn P. R. Farr, Warwickshire, England, assignor to Lucas Industries Limited, Birmingham, England

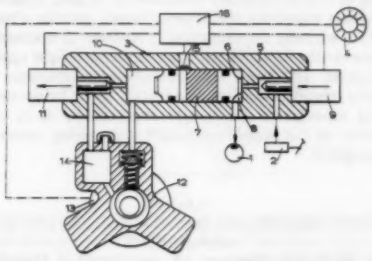
Filed Oct. 7, 1982, Ser. No. 433,233

Claims priority, application United Kingdom, Oct. 13, 1981, 8130883

Int. Cl.³ B60T *8/02*

U.S. Cl. 303—115 **24 Claims**

1. An anti-skid hydraulic braking system for vehicles comprising a wheel brake, a source of hydraulic fluid under pressure for applying said brake, skid sensing means for emitting skid signals responsive to behaviour of said wheel when said brake is applied, a modulator assembly for modulating the supply of fluid from said source to said brake in response to said skid signals from said skid sensing means, said modulator assembly comprising a housing having a bore, a de-boost piston working in said bore, a first valve, means in said housing defining an expander chamber between an end of said de-boost piston and said first valve, said first valve being disposed between said source and said expander chamber, means in said housing defining a support chamber to which said de-boost piston is subjected, and a second valve for controlling application to said de-boost piston of support fluid in said support chamber to determine the relative position of said de-boost piston in said bore, said support fluid normally being adapted to provide a biassing force for holding said de-boost piston in an advanced position in which the effective volume of said expander piston is at a minimum value, and said first valve being movable between an open position at least when said de-boost piston is in said advanced position and a closed position when said de-boost piston is displaced from said advanced position and into a retracted position, and means responsive to a skid signal to manipulate said second valve in order to release said support fluid thereby reducing said biassing force whereafter said piston can move away from said advanced position and into said retracted position in which said effective volume of said expander chamber is increased thereby reducing said pressure of fluid applied to said brake, wherein means are provided for normally biassing said first valve into a fully open position, and operation of said first valve is controlled independently of the de-boost piston, inhibit means being incorporated to ensure that at the termination of a skid signal said first valve is maintained in a closed position at least until said de-boost piston has returned to said advanced position.



4,436,349

ROLLING BEARING

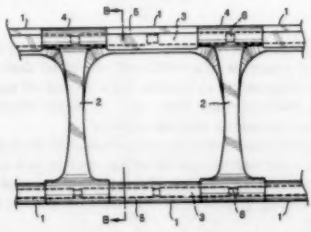
Stig L. Hallerbäck, Västra Frölunda, Sweden, assignor to Aktiebolaget SKF, Gothenburg, Sweden

Filed May 14, 1982, Ser. No. 378,136

Claims priority, application Sweden, Jun. 10, 1981, 8103629

Int. Cl.³ F16C *19/00, 33/38, 33/44*

U.S. Cl. 308—189 R **7 Claims**



1. A retainer for a rolling bearing including inner and outer race rings and rolling elements in the annular space between the rings comprising a pair of annular members and a series of circumferentially spaced webs between the annular members defining pockets for the rolling elements, said annular members

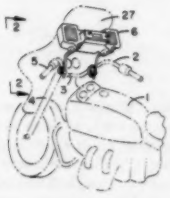
consisting of a ring-like reinforcing member of a metallic material having substantially the same coefficient of thermal expansion as the race rings and embedded in an outer shell of a plastic material having a different coefficient of thermal expansion, said metallic ring-like reinforcing members being anchored to said plastic outer shell at said web locations and said outer shell being of a greater cross sectional area at said web locations than the areas in between whereby the thermal expansion properties of said metallic reinforcing members dominates.

4,436,350

HOUSING AND RELATED MOUNTING SYSTEM FOR STEREO SYSTEMS ON MOTORCYCLES

Bart Jolin, 2265 W. Broadway Apt. H-101, Anaheim, Calif. 92804

Filed Apr. 10, 1981, Ser. No. 236,503
Int. Cl.³ A47B *81/06, 96/06;* B62J *7/00*
U.S. Cl. 312—7.1 **4 Claims**



1. A housing and mounting system for stereos, radios, mobile communication broadcasting systems, and the like, with their related units for motorcycle comprising:

(a) A plastic hollow housing unit suitably shaped to contain a stereo, radio, C.B. or the like with necessary auxiliary elements; and

(b) (Means to support said housing unit and connect said unit to the handlebars of a motorcycle (.) comprising two or more support arms with means to connect such support arms to said housing unit and means to connect said support arms to the handlebars of a motorcycle.) Two or more support arms;

(c) Means to connect said support arms to said housing unit comprising two housing brackets connected to or integral with said housing unit;

(d) Said housing brackets containing a channel and appropriate nuts and bolts to contain said support arms insertable in said channel.

4,436,351

APPARATUS FOR MOUNTING ELECTRONICS EQUIPMENT

John V. Kitrell, Lincoln, Nebr., assignor to Radio Engineering Service, Inc., Omaha, Nebr.

Filed Nov. 20, 1981, Ser. No. 323,542
Int. Cl.³ A47B *77/08;* F16L *5/00*
U.S. Cl. 312—223 **4 Claims**

1. An apparatus for mounting electronics equipment, comprising,

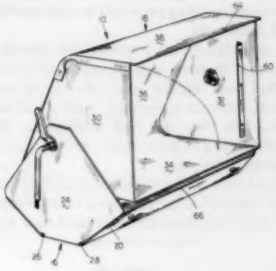
a substantially U-shaped bracket comprising a bottom mount portion having first and spacing-apart side walls extending upwardly from said bottom mount portion,

a hollow case selectively pivotally mounted on said side walls and being received therebetween,

said case comprising first and second spaced-apart side portions having rearward and forward ends and upper and lower ends, a back portion extending between the rearward ends of said side portions, a top portion extending between the upper ends of said side portions, a front portion extending between the forward ends of said side portions, said case having an open bottom portion adapted to receive electronics equipment therein, means on said case for mounting the electronics equipment in said case,

said case being selectively pivotally movable between open and closed positions relative to said bottom mount portion,

said case, when in its open position, presenting said open bottom portion in a forwardly manner whereby said electronics equipment is exposed for operation,



said case, when in its closed position, extending over and around the electronics equipment to shield the electronics equipment from the elements of weather,

a pivotal mounting means pivotally connecting each of said side portions of said case to one of the side walls of said bracket,

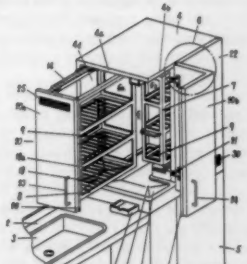
at least one of said pivotal mounting means including selective locking means for selectively maintaining said case in its said open and closed positions.

4,436,352

KITCHEN FURNISHINGS

Yoshio Okada, Katano; Yoshiaki Suzuki, Suita; Ryohei Murakami, Habikino, and Yoshiaki Segawa, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

PCT No. PCT/JP81/00029, § 371 Date Oct. 15, 1981, § 102(e) Date Oct. 15, 1981, PCT Pub. No. WO81/02382, PCT Pub. Date Sep. 3, 1981
PCT Filed Feb. 16, 1981, Ser. No. 314,096
Claims priority, application Japan, Feb. 20, 1980, 55-20713
Int. Cl.³ A47B *77/06;* A47L *19/02*
U.S. Cl. 312—228 **6 Claims**



1. A kitchen arrangement comprising:

a. a sink having a front side facing frontward, a rear side facing rearward, and two opposite sides connecting said front and rear sides, one of said two sides having an upper side edge;

b. a countertop adjacent said upper side edge on said one of said two sides of said sink defining an open space thereabove above said upper side edge; and

c. a storage cabinet on said one of said two sides of said sink above said countertop and said upper side edge, adjacent said countertop and horizontally spaced from said upper side edge, said cabinet including:

(1) outer walls defining an interior space therein, including a near side wall facing said sink, and a frontward facing front wall contiguous to said near side wall, a continuous opening being provided in said near side wall and in said front wall,

(2) a plurality of rack assemblies having rack shelves mounted thereon, slidably mounted to said outer walls within said interior space forwardly and rearwardly side-by-side for movement toward and away from said sink, such that said rack shelves are freely movable between said interior space and said open space adjacent said sink, and

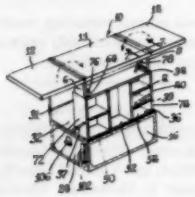
(3) a lower drain tray within said interior space below said rack assemblies for receiving water drops falling from any items accommodated on said rack shelves.

4,436,353

PORTABLE STORAGE DEVICE AND TABLE

Myron B. Tucker, 6600 Hill Rd., Boise, Id. 83703

Filed Aug. 6, 1981, Ser. No. 290,610
Int. Cl.³ A47B *85/00*
U.S. Cl. 312—241 **3 Claims**



1. A container and foldable support surface comprising:

a container means including a top, bottom, front, back and two side panels;

a shelf face including a means for pivotally connecting said shelf face with said front panel;

a table top including a means for pivotally connecting said table top with said top panel, said table top having a folded closed position and an unfolded open position;

said top panel including a means for pivotally connecting said top panel with said back panel, said top panel pivoting to an open position and acting as a support for said table top in said open position;

said shelf face including a top cross member; a bottom cross member parallel to said top cross member; two parallel side members which are substantially perpendicular to said cross members; two wing braces including a means for pivotally connecting said wing braces with said top cross member, said wing braces pivoting from said closed position where said wing braces are folded inwardly and are substantially parallel to said top cross member, to said open position where said wing braces are unfolded and substantially perpendicular to said top cross member, said wing braces in said unfolded position for the support of said table top;

said shelf face substantially parallel to and spaced from said bottom panel in said folded closed position, said shelf face substantially parallel to said front panel in said open position, said shelf face acting as a means for support for said table top in said open unfolded position; and

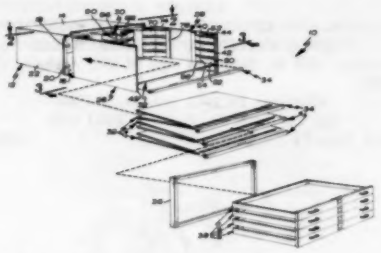
said table top parallel and interior to said top panel in said folded closed position, and said table top perpendicular to said top panel in said open position.

4,436,354

FLAT-FILE

Stanley R. Thorud, Brooklyn Center, Minn., assignor to Liberty Carton Co., Minneapolis, Minn.

Filed Nov. 16, 1981, Ser. No. 321,699
Int. Cl.³ A47B *43/02*
U.S. Cl. 312—259 **8 Claims**



1. A flat-file having a plurality of drawers located in a shell having a top, a bottom, a back, an open front, first and second sides and at least one shelf located between and parallel to the said top and said bottom, the improvement comprising at least one shelf support member, said shell and said support member being formed of a foldable material, said support member comprising:

a main panel located inside of and parallel to one of said sides; and

at least one front shelf support panel attached to the front of said main panel, said front support panel comprising at least one slot therein for engaging and supporting a shelf;

a front spacing panel spacing said front support panel from said main panel, said front support panel and said front spacing panel overlying said main panel; and

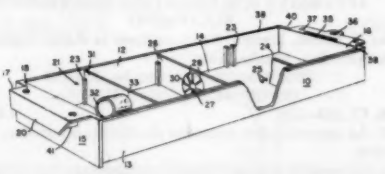
a rear support panel attached to the rear of said main panel, said rear support panel comprising at least one slot therein for engaging and supporting a shelf.

4,436,355

MODULAR STORAGE SYSTEM

William S. Fortune, 29866 Cuthbert St., Malibu, Calif. 90265

Continuation of Ser. No. 67,841, Aug. 20, 1979. This application May 1, 1981, Ser. No. 259,615
Int. Cl.³ A47B *88/00*; F16B *12/00*
U.S. Cl. 312—270 **6 Claims**



1. A modular storage system for product packaging parts comprising:

(a) a plurality of housings;

(b) a drawer for each of said housings;

(c) each of said housings including a top wall and two parallel side walls, said top wall having a plurality of alignment slots adjacent said side walls, alignment tabs extending downwardly from said side walls and registering with alignment slots of a housing thereabove;

(d) each of said housings having on its top wall a recess and

having on the bottom of the side wall opposite said recess a lateral rail extending therefrom and adapted to fit the recess of a laterally adjacent housing, and alignment slots on said rail; and

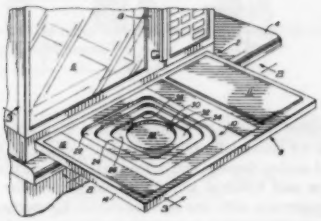
(e) each of said drawers having a bottom wall and two side walls, a front wall including a portion for removably inserting or withdrawing said drawer into or from one of said housings, and a rear wall including a horizontally projecting surface having an upward projection to cooperate with a downwardly extending ridge on the end of the top wall of said housing, thereby to form a stop.

4,436,356

OVEN SUPPORTING APPARATUS INCORPORATING SLIDABLE COOKWARE SUPPORT

Desi D. Stelling, 19218 N. 17th Ave., Phoenix, Ariz. 85027

Filed Sep. 8, 1980, Ser. No. 185,190
Int. Cl.³ F24C *15/16*
U.S. Cl. 312—281 **7 Claims**



1. A cookware support for use in conjunction with an oven and for supporting at least first and second food containers each having a bottom portion, the bottom portion of the first food container being larger than the bottom portion of the second food container, said cookware support comprising in combination:

a. a base;

b. a first supporting surface supported by said base, said first supporting surface having an area commensurate with the bottom portion of the first food container for supporting the first food container, said first supporting surface including a first horizontally disposed region having an outer periphery commensurate with the bottom portion of the first food container, said first supporting surface also including a first side wall extending upwardly from the outer periphery of said first horizontally disposed region for maintaining the first food container upon said first horizontally disposed region; and

c. a second supporting surface supported by said base concentric with and depressed within and below said first supporting surface, said second supporting surface having an area commensurate with the bottom portion of the second food container for supporting the second food container, said second supporting surface including a second horizontally disposed region having an outer periphery commensurate with the bottom portion of the second food container, said second supporting surface also including a second side wall extending upwardly from the outer periphery of said second horizontally disposed region to said first horizontally disposed region for maintaining the second food container upon said second horizontally disposed region;

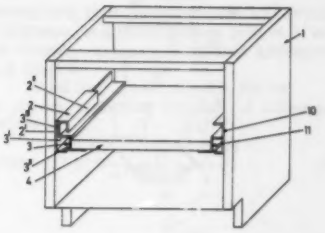
d. said first and second supporting surfaces being made of an elastic material for enabling said first and second side walls to grippingly engage the bottom portions of the first and second food containers, respectively.

4,436,357

PULL-OUT GUIDE ASSEMBLY FOR DRAWERS, SHELVES OR THE LIKE

Erich Röck, and Josef Brunner, both of Höchst, Austria, assignors to Julius Blum Ges. m.b.H., Höchst, Austria

Filed Feb. 8, 1982, Ser. No. 347,234
Claims priority, application Austria, Feb. 19, 1981, 746/81
Int. Cl.³ F16C *21/00*
U.S. Cl. 312—338 **4 Claims**



1. In a pull-out guide arrangement for use on opposite sides of a drawer, shelf or the like for guiding movement thereof into and out of a body of a piece of furniture, said arrangement being of the type including, for use on respective opposite sides of the drawer, shelf or the like, first and second assemblies each comprising a supporting rail adapted to be mounted on a side panel of the body of the piece of furniture, a pull-out rail adapted to be mounted on the respective side of the drawer, shelf or the like, a roller carrier positioned between said supporting and pull-out rails, and rollers retained by said roller carrier, the improvement wherein:

said first assembly comprises:

a said supporting rail having spaced outer and inner vertical flanges and spaced upper and lower horizontal flanges;

a said pull-out rail having outer and inner vertical flanges extending in opposite directions from opposite ends of a horizontal flange;

a said roller carrier positioned between said supporting and pull-out rails;

said rollers including plural cylindrical vertical load bearing rollers retained by said roller carrier, at least one said vertical load bearing roller being in rolling contact with said upper horizontal flange of said supporting rail and said horizontal flange of said pull-out rail, and at least one said vertical load bearing roller being in rolling contact with said horizontal flange of said pull-out rail and said lower horizontal flange of said supporting rail; and

said rollers further including plural cylindrical, lateral guide rollers retained by said roller carrier, at least one said guide roller being above said horizontal flange of said pull-out rail and in rolling contact with a first said vertical flange of said supporting rail and a first said vertical flange of said pull-out rail, and at least one said guide roller being below said horizontal flange of said pull-out rail and in rolling contact with a second said vertical flange of said supporting rail and a second said vertical flange of said pull-out rail; and

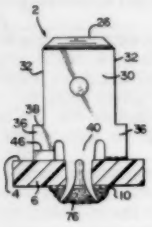
said second assembly comprises said supporting and pull-out rails each having only a single vertical flange;

whereby said first assembly provides precise lateral stability for the drawer, shelf or the like, and said second assembly is laterally open to allow for manufacturing tolerances of the drawer, shelf or the like.

4,436,358
TERMINAL TAB INTENDED FOR MOUNTING ON A CIRCUIT BOARD

Daniel R. Coldren, Enola, and Dennis P. Schwenk, Hummelstown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 31, 1982, Ser. No. 364,151
Int. Cl.³ H01R 9/09
U.S. Cl. 339—17 C **7 Claims**



1. A tab-type terminal of the type comprising a flat rectangular tab having a free end and a mounting end, the mounting end having mounting means for mounting the terminal on a circuit board, the tab having oppositely facing parallel major surfaces and oppositely facing parallel edge surfaces extending from the free end to the mounting end, the terminal being characterized in that:

the mounting end comprises a base portion having oppositely facing major surfaces which are co-planar with the major surfaces of the tab, the base portion extending laterally beyond the edge surfaces of the tab whereby stop shoulders, directed towards the free end of the tab, are provided for a receptacle coupled to the tab,

a mounting leg extends from the base portion, the mounting leg being located between the side edges of the base portion, the mounting leg having convergent side edges extending towards the base portion, the slot dividing the mounting leg into two side-by-side co-planar sections,

a pair of stabilizing arms extend in opposite directions from the base portion normally of the planes of the major surfaces of the base portion, the stabilizing arms having co-planar support surfaces for stabilizing the terminal on one surface of a circuit board, the stabilizing arms having been formed by bending portions of the flat blank of the terminal in opposite directions until the arms extend at substantially right angles from the flat base portion, the co-planar support surfaces being extensions of the major surfaces of the base portion and not edge surfaces whereby the tab can be mounted on a circuit board by inserting the mounting leg through a hole in the circuit board until the support surfaces are against the one surface of the circuit board and thereafter bending the two sections of the mounting leg into engagement with the circuit board at the other surface thereof.

4,436,359
ELECTRICAL CONNECTOR TERMINATION SYSTEM FOR QUICK FIELD SERVICE

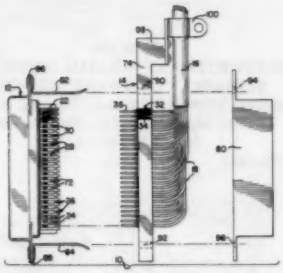
Alan H. Kasper, and Istvan Mathe, both of Cicero, Ill., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Oct. 14, 1977, Ser. No. 842,186
Int. Cl.³ H01R 13/422, 13/627
U.S. Cl. 339—61 M **9 Claims**

1. An electrical connector termination system comprising:

a connector component defining a plurality of open ended, elongate mounting cavities therein and including a plurality of contact members disposed respectively in said cavities, each said cavity including a restrictive guide orifice defined by inner embossment means disposed proximate one open end thereof, each said contact member including a terminal socket element disposed within one said cavity inwardly of said embossment means; and

a termination component including a support member defining at least one open ended, elongate slot therein with each said slot communicating longitudinally therealong with the exterior of said support member by a longitudinal side opening, said support member including inner restrictive lip means disposed in each said slot proximate the open end thereof, and a pin contact member at least partially disposed in each said slot and disengageable therefrom through said side opening, each said pin contact



member including a terminal portion, an active pin portion for electrically and mechanically engaging within one said socket element and at least one neck portion intermediate said terminal and active pin portion for releasable engagement with one said restrictive lip means, each said active pin portion cooperating with one said restrictive guide orifice to releasably maintain said connector and termination components in a fully terminated condition, all said pin contact members being simultaneously disengageable from said support member after engagement within said socket elements.

4,436,360
ELECTRICAL CONNECTORS AND TERMINAL CONNECTING BLOCK

Robert H. Knickerbocker, Cheshire, Conn., assignor to The Siemon Company, Watertown, Conn.

Continuation of Ser. No. 262,495, Jun. 14, 1972, Pat. No. 4,084,877, which is a continuation of Ser. No. 868,417, Oct. 22, 1969, abandoned. This application Feb. 21, 1978, Ser. No. 879,268
Int. Cl.³ H01R 9/08
U.S. Cl. 339—97 P **4 Claims**

1. A two-wire clip terminal comprising an elongate flat body formed from flat resilient metal and having two notches at its upper part, a base portion at its lower part, and a slot communicating with the lower end of each notch, said slots providing a center arm and two end arms extending in the same direction

from a common base, the outer ends of said arms being free so as to provide three cantilever beams arranged side by side, the

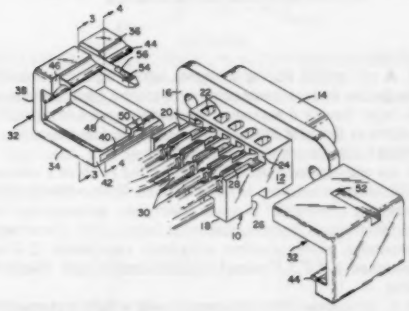
effective width of each end arm being less than the effective width of said center arm.

4,436,361

HERMAPHRODITIC BACK SHELL COVER

Earl W. McCleerey, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 20, 1981, Ser. No. 323,207
Int. Cl.³ H01R *4/24*
U.S. Cl. 339—97 P **5 Claims**



5. A back shell assembly for enclosing an open rear portion of an elongated electrical connector designed to terminate a plurality of electrical conductors in said open rear portion and having at least one transverse channel extending across said connector at a location spaced from a mating face of said connector, said back shell assembly enclosing and protecting the termination of said conductors and comprising:

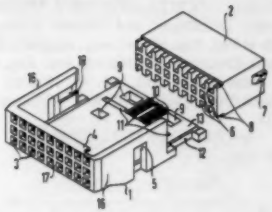
a pair of hermaphroditic cover members together defining a through cavity for receiving a portion of said connector therein, each said cover member having a first long wall, a second parallel spaced short wall, and an intermediate wall interconnecting said first and second walls along one aligned marginal edge of each said first and second walls, said first wall having an elongated groove extending along substantially the entire free edge thereof and said second short wall having an elongated flange extending along substantially the entire free edge thereof adapted to be received in the groove of said long wall of another cover member, a transversely extending rib on an inner surface of said long wall forming a channel intersecting said groove and opening outwardly to define a shoulder, latching means on said short wall including an outwardly directed lug, said latching means adapted to extend through said channel with said lug engaging said shoulder, whereby, a pair of oppositely oriented cover members are snap fitted together to enclose a rear terminating portion of an electrical connector.

4,436,362

CONNECTOR FOR PRINTED CIRCUIT BOARDS

Richard Hoffmann, and Franz Zobawa, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich

Filed Dec. 2, 1981, Ser. No. 326,708
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1981, 3103455
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—103 M **10 Claims**



1. A connecting plug comprising:

a rectangular parallelopiped contact strip including a front face and a plurality of elongate rectangular chambers therein for supporting a plurality of contacts in a predetermined pattern, and a pair of oppositely-directed detents; and a receiving part including a front cross bar having a front face, a rear face and a plurality of beveled openings therethrough in the same pattern as and for alignment with said chambers, a floor extending rearwardly from said front cross bar and including a rear section, strain relief grooves in said rear section and a pair of openings on respective sides adjacent said rear face of said front cross bar, said side walls including respective openings for snap-in retention of said oppositely-directed detents and respective guide tracks for said detents extending from the rear ends of said side walls to said openings.

4,436,363

BROADBAND ANTIREFLECTION COATING FOR INFRARED TRANSMISSIVE MATERIALS

Kenneth B. Steinbruegge; Johanna S. Schruben, and Lyle H. Taylor, all of Murrysville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

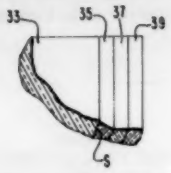
Filed Aug. 6, 1982, Ser. No. 405,825
Int. Cl.³ G02B *5/28*
U.S. Cl. 350—1.6 **16 Claims**

1. A broadband antireflection coating for use on infrared transmissive materials comprising:

a first thin layer, of a compound selected from the group consisting of zinc-selenide (ZnSe) and zinc-sulfide (ZnS), disposed on the transmissive material;

a second thin layer, of a compound selected from the group consisting of lead-fluoride (PbF_2) and aluminum oxide (Al_2O_3), disposed on said first layer; and

a third thin layer of a compound, selected from the group consisting of magnesium-fluoride (MgF_2), barium-fluoride



(BaF_2) and calcium-fluoride (CaF_2), disposed on said second layer.

4,436,364

PIEZOELECTRIC APPARATUS FOR PRODUCING ROTARY OSCILLATION OF A MIRROR

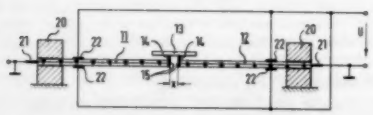
Reinhard Lauer, Denzlingen, and Dietmar Pfefferle, Pfaffenweiler, both of Fed. Rep. of Germany, assignors to Erwin Sick GmbH Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Sep. 4, 1981, Ser. No. 299,366

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1980, 3035315

Int. Cl.³ G02B *27/17*; G02F *1/34*

U.S. Cl. 350—6.6 **9 Claims**



1. Piezoelectric apparatus for producing rotary oscillation of a mirror, the apparatus comprising first and second piezoceramic flexible strips each having a clamped end and a free end, said strips being substantially aligned in one plane with their free ends facing and spaced apart from each other; AC voltage generating means for generating an AC voltage with a frequency which differs significantly from a natural resonant frequency of said strips; means for applying said AC voltage to said strips to energise them to execute oscillations so that said free ends are periodically displaced in counterphase out of said plane; respective resilient mounting means extending between said free ends and said mirror for mounting said mirror on strips feedback electrode means on at least one of said strips for generating a feedback voltage, means for time delaying said feedback voltage by an amount equal to one half of a period of said natural resonant frequency and means for feeding said feedback voltage back to said strips together with said AC voltage.

4,436,365

DATA LINK USING INTEGRATED OPTICS DEVICES

Martin G. Hodgins, Yorktown Heights, N.Y., and William J. Jordan, Whippany, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 21, 1981, Ser. No. 313,600

Int. Cl.³ G02B *5/174*

U.S. Cl. 350—96.16 **10 Claims**

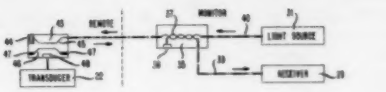
3. A signal transmission system including at least one optical fiber as the medium of transmission comprising

first and second terminals for said transmission system,

first and second optical couplers including main and auxiliary channels in cross-coupling proximity at the respective terminals of said transmission system,

a light source at said first terminal for providing continuous lightwaves through said main channel in said first optical coupler for an optical fiber,

a receiver at said first terminal accepting lightwaves from said auxiliary channel in said first optical coupler,



a reflector at said second terminal for lightwaves incoming from an optical fiber to said main channel in said second optical coupler, and

electrical signaling means at said second terminal for modulating reflected lightwaves in said auxiliary channel in said second optical coupler.

4,436,366

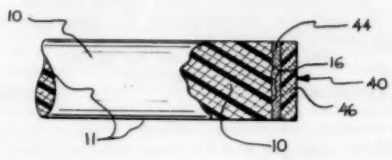
END CAPPING AN OPTICAL FIBER

Edward A. Abramson, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 17, 1981, Ser. No. 235,036

Int. Cl.³ G02B *7/26*

U.S. Cl. 350—96.20 **5 Claims**



1. A cut optical fiber end capped with a light transmissible smooth flat surface comprising a hardened photopolymerizable layer having a maximum thickness about 0.45 times the diameter of the core divided by the numerical aperture of said core and a minimum thickness of 20 μm.

2. An end capped optical fiber according to claim **1** wherein the photopolymerizable layer is derived from a composition comprising trimethylol propane triacrylate, polyoxyethyl trimethylolpropane, polyethyleneoxide lauryl ether, 2-mercapto benzoxazole, styrene/maleic anhydride copolymer, 2,-2'-(o-chlorophenyl)-4,4',5,5'-tetraphenylbiimidazole and Michler's ketone.

3. A cut optical fiber end capped with a light transmissible smooth flat surface comprising a hardened thermally polymerizable layer having a maximum thickness about 0.45 times the diameter of the core divided by the numerical aperture of said core and a minimum thickness of 20 μm.

4,436,367

OPTICAL SLIP RING ASSEMBLY

Norris E. Lewis, Christiansburg, and Michael B. Miller, Blacksburg, both of Va., assignors to Litton Systems, Inc., Blacksburg, Va.

Filed Mar. 9, 1981, Ser. No. 241,588

Int. Cl.³ G02B *7/26*

U.S. Cl. 350—96.20 **11 Claims**

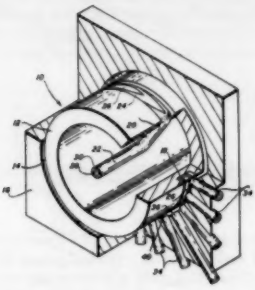
6. An optical slip ring assembly for coupling an optic signal from a rotor source to a stator detector, the assembly comprising:

a rotor optic fiber having a first end for coupling with the optic signal source and a second end portion having one side progressively removed so that both the width and the depth of the removed area increases along the length of the fiber to form a light-emitting area of a selected length,

cylindrical rotor means having a circular groove means for mounting said fiber second end portion therein so that said light-emitting area faces radially outwardly,

a plurality of stator fibers each having a first pickup end, said pickup ends being grouped into a radial symmetric array of selectively inwardly directed multistrand fiber blocks which collectively comprise a pickup area,

stator means for mounting said fiber pickup ends in said



radially symmetric, selectively inwardly directed array concentrically about said circular groove means defining said pickup area so that said light-emitting area rotates concentrically therein whereby an optic signal transmitted from the source through the rotor fiber is picked up by said stator fibers, and

each said stator fiber having a second end grouped in a collective bundle for coupling the optic signal picked up by said stator fibers to the stator detector.

4,436,368

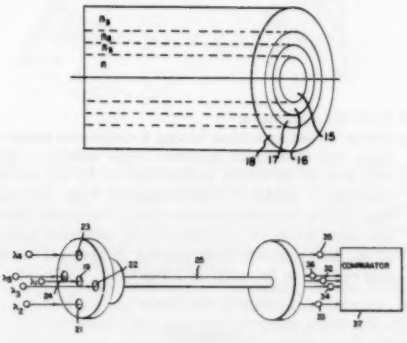
MULTIPLE CORE OPTICAL WAVEGUIDE FOR SECURE TRANSMISSION

Donald B. Keck, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 803,772, Jun. 6, 1977, abandoned. This application Jul. 31, 1981, Ser. No. 288,925

Int. Cl.³ G02B *5/172*

U.S. Cl. 350—96.33 **21 Claims**



11. Apparatus for detecting intrusion upon an optical waveguide communication system comprising:

a glass optical waveguide having multiple cores and cladding, the index of refraction of each core being greater than the index of refraction of its cladding, the relative light loss between a primary core and a secondary core being much different upon perturbation of the waveguide because of a substantial difference in at least one of the following: the relative core cladding index difference, wherein the index of refraction of said primary core is substantially greater than the index of refraction of said secondary core, wavelengths of light transmitted in the cores, and diameters of said primary and secondary cores;

means for propagating and detecting light signals along said optical waveguide; and

means for detecting a change in said relative light loss between said primary and secondary cores to identify perturbation of said optical fiber.

4,436,369

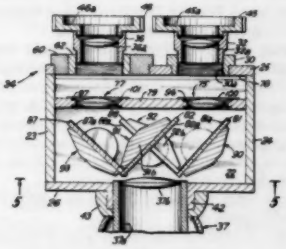
STEREOSCOPIC LENS SYSTEM

William A. Bukowski, New York, N.Y., assignor to Optimax III, Inc., New York, N.Y.

Filed Sep. 8, 1981, Ser. No. 300,255

Int. Cl.³ G02B *27/24*; G03B *35/10*

U.S. Cl. 350—130 **15 Claims**



1. A stereoscopic lens system for attachment and use with a motion picture camera device for simultaneously forming left and right images of a viewed scene on an optical plane for recording pairs of such left and right images in successive frame areas of a motion picture record medium carried by the camera device, comprising:

an optics body;

a pair of focusable optical image receiving lens elements carried by said body and being laterally spaced apart by an interocular distance and vertically displaced by an amount corresponding to the pitch between adjacent longitudinally displaced halves of the frame areas on the record medium to be recorded;

a relay lens mounted to said optics body and adapted for removable mounting to the motion picture camera device;

field lens means at the interior of said body and optically spaced from the receiving elements near the image plane thereof so as to form respective left and right focused images;

masking means in the respective optical paths for said right and left images for establishing a division line between said images along adjacent lateral edges thereof within the frame area;

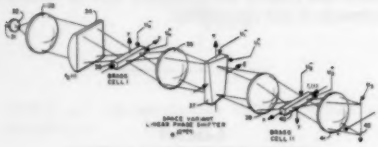
reflecting element means at the interior of said body and located intermediate said field lens means and said optical plane for directing said left and right images from said field lens means simultaneously to said relay lens such that said simultaneous images, as presented to said relay lens for transmission to the plane of the record medium, are generally in lateral registration and longitudinally superposed in an area corresponding to a single frame of the record medium to be recorded.

4,436,370

SPACE VARIANT LINEAR PHASE SHIFTER FOR OPTICAL AMBIGUITY FUNCTION GENERATOR

Joseph J. Rebholz, Burnsville, and Poohsan N. Tamura, Bloomington, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 9, 1981, Ser. No. 232,927
Int. Cl.³ G06G 9/00; G01S 13/58
U.S. Cl. 350—162.12 3 Claims



1. An optical system utilizing a beam of substantially coherent light to create the ambiguity function arising from a first signal and a second signal; said system comprising:

a first data input means for coding said light beam with said first signal, said first means defining an x, y coordinate system;

a first Fourier Transform lens means lying in the path of said light beam and a Fourier Transform plane associated with said first Fourier Transform lens means;

a linear phase shifter comprising a lens pair including a cylindrical lens and a spherical lens fastened together, the spherical lens having a sign opposite from that of the cylindrical lens and said lens pair lying in the path of said light beam in said Fourier Transform plane and wherein, in order to generate the proper transmissivity function, the lens pair is rotated about the optical axis by 45° with respect to the x, y coordinate system;

a second data input means for coding said light beam with said second signal; and,

a final Fourier Transform lens means lying in the path of said light beam for producing the ambiguity function at an ambiguity plane.

4,436,371

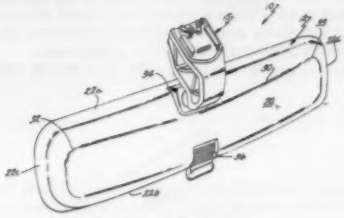
VEHICLE MIRROR ASSEMBLY

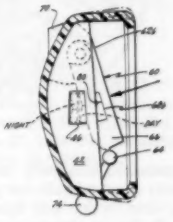
Denis Wood, Dublin, Ireland; John F. Thomas, Jr., Holland, Mich., and Barry Dipper, Cardiff, Wales, assignors to Donnelly Mirrors, Inc., Holland, Mich.

Filed Jun. 24, 1981, Ser. No. 276,969
Int. Cl.³ G02B 17/00
U.S. Cl. 350—281 65 Claims

1. In a day/night rearview mirror assembly for vehicles including a mirror case and a pivot actuator, said case being formed in one piece from a resinous material and having a back, a continuous peripheral side wall adapted to outline the peripheral edge of a mirror element, and support means for supporting said pivot actuator within said case, said pivot actuator having mounting means for mounting a bracket for securing said assembly on a support and pivot means for pivoting said actuator and case between at least two different positions with respect to said mounting means, the improvement comprising:

said molded case including flexible, resilient portions and having a preformed lip on said continuous peripheral side wall for retaining a mirror element within said case; said pivot actuator being substantially rigid; said case portions being sufficiently flexible and resilient to bias said actuator toward one or the other of said actuator positions; said support means supporting said actuator in a prestressed position when assembled in said case while said lip extends inwardly a distance sufficient such that when a mirror element is received within said case, and said actuator is pivoted with said pivot means, said case will flex with respect to said rigid actuator to allow the pivotal movement while said lip will continue to cover the edge of the mirror element and a predetermined portion of the mirror element spaced inwardly from the edge thereof regardless





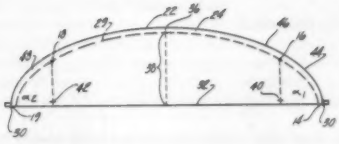
of the flexing action of said case and said lip during such pivoting.

4,436,372

ELLIPTICAL MIRROR FOR VEHICULAR USE

William P. Schmidt, Rockwood, and Franklin D. Hutchinson, New Boston, both of Mich., assignors to Mirror Lite Company, Rockwood, Mich.

Filed Feb. 5, 1981, Ser. No. 231,662
Int. Cl.³ G02B 5/10
U.S. Cl. 350—293 27 Claims



1. A mirror comprising:

a convex reflecting surface having a continuous peripheral edge, said continuous peripheral edge defining a plane, said convex reflecting surface further having an apex extending a predetermined distance H from said plane, said convex reflecting surface at said continuous peripheral edge having an outer diameter D, said outer diameter D and said predetermined distance H having a relationship of D/H in the range of 2.5 to 3.00.

4,436,373

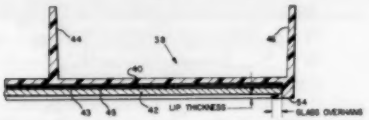
SOLAR REFLECTOR PANEL

Paul A. Kirsch, Bensalem, Pa., assignor to The Budd Company, Troy, Mich.

Filed Jun. 25, 1981, Ser. No. 277,097
Int. Cl.³ G02B 7/18, 5/10
U.S. Cl. 350—296 1 Claim

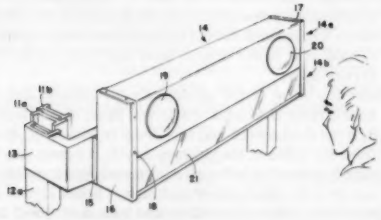
1. A parabolic solar reflector panel for focusing energy received from the sun comprising:

(a) a glass sheet with four side edges and having front and rear surfaces;
(b) said rear surface of said glass sheet having a reflective coating thereon;
(c) said reflective coating having a protective coating thereon;
(d) an integral fiberglass reinforced thermoset piece having a plurality of rib portions secured to said protective coating to provide a backing of uniform thickness for said glass sheet with said reflective and protective coatings;
(e) said piece extending around the four side edges of said glass sheet and extending partly across the front surface



thereof to provide a lip portion about the periphery of said glass sheet to mechanically lock said sheet to said piece;
(f) said lip portion extending from 0.25" to 0.125" over the front surface of said glass sheet and having a thickness between 0.040" to 0.125";
(g) attachment elements disposed on said solar panel;
(h) a strongback assembly;
(i) means including said attachment elements to connect said solar reflector panel to said strongback; and
(j) said strongback assembly being movable to move said reflector panel in a direction to receive maximum energy from the sun.

4,436,374
FORKLIFT SAFETY SCOPE
Henry A. Krueger, 4920 S. Linder Ave., Chicago, Ill. 60638
Filed Jan. 18, 1982, Ser. No. 339,997
Int. Cl.³ G02B *5/08, 5/10*
U.S. Cl. 350—302 **8 Claims**

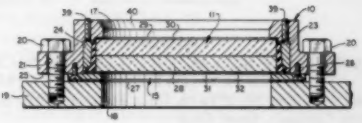


1. In a forklift truck having a front lift assembly including a frame with two vertical side posts projecting upwardly at the front end of the truck and a horizontal cross member joining the two posts at an elevated position which blocks the forward view of the truck operator during normal operating conditions, the improvement which comprises:

periscope means including an elongated tubular housing arranged on the back side of said cross member, said housing having an upper portion rising above said cross member with a front transparent window and a lower portion located behind said cross member with a back transparent window, each window extending over most of the length of the housing, a paired set of periscopic mirrors mounted diagonally within said housing in substantially parallel facing relationship for periscopic viewing from the upper front window down to the lower back window; and

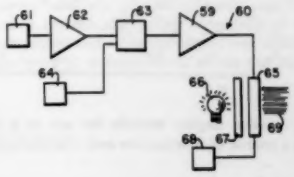
two convex mirrors, each being mounted near the opposite ends of said housing on the back side of its upper portion for wide-angle viewing to the rear of the operator.

4,436,375
SIGHT GLASS APPARATUS
Charles E. Meginnis, deceased, late of Charleston, W. Va. (by Stanley T. McKeny, executor), assignor to Pressure Products Company, Charleston, W. Va.
Filed Mar. 2, 1982, Ser. No. 353,924
Int. Cl.³ G02B *5/00, 7/00;* G01F *23/02*
U.S. Cl. 350—319 **10 Claims**



1. A sight glass assembly comprising a housing structure having a circular opening therethrough, said opening having an enlarged section, a lens disposed across said opening and having a peripheral portion received within said enlarged section, a sealing ring assembly disposed in said enlarged section, said sealing ring assembly comprising a rigid compression ring and a resilient packing member mounted on said compression ring, said packing member having an L-shaped cross-sectional configuration including a wall portion mounted on an inner side of said compression ring and engaging the periphery of said lens and a flange portion mounted on said compression ring and engaging said housing structure, and means mounted on said housing structure and engageable with said compression ring for urging said compression ring against said packing member, causing said packing member to expand radially, thereby effecting a seal between said housing structure and the periphery of said lens and placing said lens in radial compression.

4,436,376
LIGHT MODULATOR, DEMODULATOR AND METHOD OF COMMUNICATION EMPLOYING THE SAME
James L. Fergason, 5806 Horning Rd., Kent, Ohio 44240
Continuation-in-part of Ser. No. 121,071, Feb. 13, 1980, Pat. No. 4,385,806, which is a continuation-in-part of Ser. No. 913,618, Jun. 8, 1978, abandoned. This application Feb. 17, 1981, Ser. No. 235,006
The portion of the term of this patent subsequent to May 31, 2000, has been disclaimed.
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—332 **27 Claims**



1. A light modulator comprising at least one liquid crystal cell comprising two parallel transparent plates; a transparent electrical conductive layer applied to the confronting surfaces of the said two plates; each said conductive layer having parallel surface alignment, the said alignment of the two adjoining surfaces being parallel; a continuous layer of nematic liquid crystal having positive dielectric anisotropy between the two electrical conducting coatings;

means for applying a fixed electrical bias to the two said electrical conducting coatings;

means for applying an amplitude modulated oscillatory electrical signal having a frequency greater than 10 hertz across the said continuous layer;

a source of polarized light directed through the said two transparent plates;

whereby the light which passes through the said two transparent plates is a phase-shifted beam which is distinguishable from the light from the said source in a manner which corresponds to the said oscillatory electrical signal.

4,436,377

TRANSMISSIVE REFLECTOR INCLUDING NACREOUS, PRESSURE SENSITIVE ADHESIVE LAYER

James A. Miller, Silver Lake, Ohio, assignor to Morgan Adhesives Company, Stow, Ohio

Filed Nov. 6, 1980, Ser. No. 204,581

Int. Cl.³ G02F *1/133*; G42D *15/00*; C09K *3/34*; B32B *5/16*

U.S. Cl. 350—345 **21 Claims**

1. A transmissive reflector, comprising;

a nacreous pigment and a transparent adhesive, the amount of said nacreous pigment being from 15 to 30 parts by weight based upon 100 parts by weight of said adhesive, said nacreous pigment having a particle size of from 2 to 50 microns, said nacreous pigment being in combination with said adhesive, said combination being a mixture.

4,436,378

PASSIVE DISPLAY MODULE AND SYSTEM

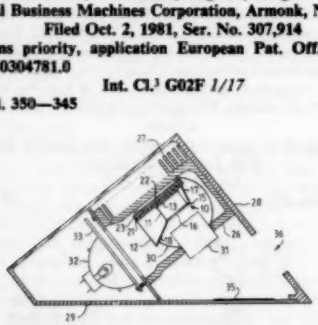
David H. Kirkman, Winchester, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 2, 1981, Ser. No. 307,914

Claims priority, application European Pat. Off., Dec. 31, 1980, 80304781.0

Int. Cl.³ G02F *1/17*

U.S. Cl. 350—345 **9 Claims**



1. A passive display module for use in a display system having a source of illumination and a projection lens comprising:

a counter electrode,

a display electrode area,

a liquid filled cell having a transparent top portion and a wall surrounding said display electrode area,

a side light guide coextensive with said display electrode area in one dimension, said guide having an inner face forming at least a part of said wall and an outer face for receiving light from an external source, said guide having a reflective upper surface inclined downwardly towards said display electrode area.

4,436,379

TWO-LAYER LIQUID CRYSTAL DISPLAY PANEL

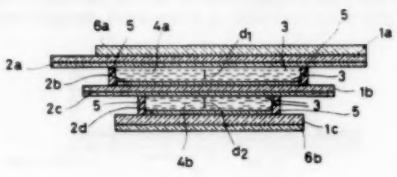
Fumiaki Funada, Yamatokoriyama; Syuichi Kozaki, Nara; Masataka Matsuura, Tenri, and Tomio Wada, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 13, 1980, Ser. No. 206,532

Claims priority, application Japan, Nov. 13, 1979, 54-147244

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—347 E **3 Claims**



1. A liquid crystal display cell comprising:

first, second and third substrate means;

a first pair of patterned electrode means formed on said first and said second substrate means, and a second pair of patterned electrode means formed on said second and said third substrate means;

said first and said second substrate means forming a first cavity therebetween and said second and said third substrate means forming a second cavity therebetween;

a first liquid crystal layer disposed in said first cavity and a second liquid crystal layer disposed in said second cavity; and

a pair of polarizers each adhered to an outer surface of said first substrate means and said third substrate means, respectively;

each of said polarizers having a plane of polarization substantially perpendicular to or parallel to the plane of polarization of the other of said polarizers;

the plane of polarization of each of said polarizers being substantially perpendicular to or parallel to the direction of the longitudinal axes of liquid crystal molecules in each of said first liquid crystal layer and said second liquid crystal layer;

where the value of the product $\Delta n_1 \cdot d_1$ wherein Δn_1 is the double refractive index of said first liquid crystal layer and d_1 is the thickness of said first liquid crystal layer, deviates from the value of the product $\Delta n_2 \cdot d_2$, wherein Δn_2 is the double refractive index of said second liquid crystal layer and d_2 is the thickness of said second liquid crystal layer, by about 10% to about 20% and both $\Delta n_1 \cdot d_1$ and $\Delta n_2 \cdot d_2$ for visible light are less than 2 μm.

4,436,380

ELECTROCHROMIC DISPLAY DEVICE

Kohzo Yano, Yamatokoriyama; Hiroshi Hamada, Nara; Yasuhiko Inami, Nara, and Tomio Wada, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 27, 1981, Ser. No. 287,047

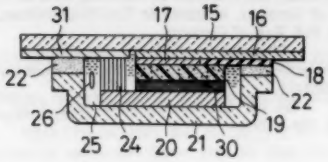
Claims priority, application Japan, Jul. 31, 1980, 55-106885

Int. Cl.³ G02F *1/17*

U.S. Cl. 350—357 **20 Claims**

1. An electrochromic display device having an electrolyte a display electrode formed of an electrochromic substance and a

counter-electrode therefor in which a redox layer of said counter-electrode is formed from a burnt material comprising a



self-film-forming compound and a carbonaceous electroconductive substance and including substantially no binder.

4,436,381

PRECISION PRESSED GLASS OBJECT

Hendrik J. M. Joormann; Hendrik Verweij, and Jan Haisma, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 396,533, Jul. 8, 1982, which is a division of Ser. No. 161,196, Jun. 19, 1980, Pat. No. 4,348,484, which is a continuation-in-part of Ser. No. 119,324, Feb. 7, 1980, abandoned. This application Jun. 24, 1983, Ser. No. 507,404

Claims priority, application Netherlands, May 18, 1979, 7903914

Int. Cl.³ G02B *3/00*; C03C *3/16*

U.S. Cl. 350—432 **3 Claims**

1. A precision pressed object of glass comprising a glass having a composition consisting essentially of 45–55 mol. % P_2O_5, 15–40 mol. % BaO, 5–35 mol. % PbO, 5–15 mol. % Li_2O, 0–2 mol. % Al_2O_3, and 0–6 mol. % F in the form of fluoride wherein up to 25% of BaO may be replaced by an equimolar quantity of at least one of CaO, MgO and SrO, and up to 25% of Li_2O may be replaced by an equimolar quantity of at least one other alkali metal oxide; and a lens arrangement of said glass composition, said lens arrangement not deviating at any single point of its surface by more than 0.5 micrometers from a predetermined curvature, and said lens arrangement having a surface roughness less than 0.02 micrometers.

4,436,382

RETROFOCUS TYPE SUPER WIDE ANGLE LENS SYSTEM

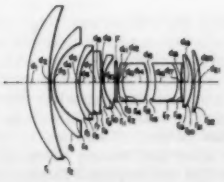
Kazuo Ikari, Hachiouji, and Toru Fujii, Hino, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1981, Ser. No. 316,915

Claims priority, application Japan, Nov. 4, 1980, 55-153790

Int. Cl.³ G02B *9/64, 13/04*

U.S. Cl. 350—458 **7 Claims**



1. A retrofocus type superwide angle lens system comprising a first positive meniscus lens component having the convex surface on the object side, a second negative meniscus lens component having the convex surface on the object side, a third negative meniscus lens component having the convex surface on the object side, a fourth positive lens component, a fifth negative meniscus lens component, a sixth positive cemented lens component, a seventh negative cemented lens component, an eighth positive meniscus lens component having the convex surface on the object side, a ninth positive lens component and a filter disposed between said fifth and sixth lens components, said lens system satisfying the following respective conditions:

(1) $\nu_1 > 70$

(2) $5.5f < f_1 < 7.2f$

(3) $n_2, n_3 > 1.75$

(4) $0.65f < |f_{12345}| < 0.75f$, $f_{12345} < 0$

(5) $0.2f < d_{10} + d_{11}/N + d_{12} < 0.3f$

(6) $0.44f < D_6 < 0.55f$

wherein the reference symbol f represents a composite focal length of the entire system, the reference symbol f_1 represents a focal length of the first lens component, the reference symbol f_{12345} represents a composite focal length from the first lens component to fifth lens component, the reference symbols n_2 and n_3 represent refractive indices respectively of the second lens component and third lens component, the reference symbol ν_1 represents an Abbe's number of the first lens component, the reference symbol d_{11} represents a thickness of the filter, the reference symbols d_{10} and d_{12} represent air spaces respectively between the fifth lens component and filter and between the filter and sixth lens component, the reference symbol N represents a refractive index of the filter, and the reference symbol D_6 represents a thickness of the sixth lens component.

4,436,383

F-θ LENS SYSTEM

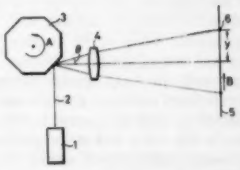
Haruo Maeda, Kanagawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 2, 1982, Ser. No. 414,311

Claims priority, application Japan, Sep. 11, 1981, 56-142404

Int. Cl.³ G02B *9/34, 27/17*

U.S. Cl. 350—469 **7 Claims**



1. An F-θ lens system comprising a first lens group consisting of a first positive meniscus lens component having a concave surface on the incidence side and a second negative lens component, and a second lens group consisting of a third positive lens component and a fourth positive lens component, said lens system being so designed as to satisfy the following conditions:

$$0.24 < \frac{e_{I\,II}}{f_{II}} < 0.29 \quad (1)$$

$$3.2 < \frac{f_1}{|f_2|} < 7.1 \quad (2)$$

$$0.95 < \frac{r_2}{r_3} < 1.1 \quad (3)$$

wherein the reference symbol $e_{I\,II}$ represents distance between the principal points of said first lens group and said second lens group, the reference symbol f_{II} designates focal length of said second lens group, the reference symbols f_1 and f_2 denote focal

lengths of said first and second lens components respectively, and the reference symbols r_2 and r_3 represent radii of curvature on the image side surface of said first lens component and incidence side surface of said second lens component respectively.

4,436,384

BINOCULAR STEREO-MICROSCOPE

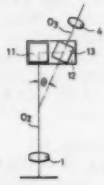
Akio Taira, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1981, Ser. No. 259,239

Claims priority, application Japan, May 8, 1980, 55-59993

Int. Cl.³ G02B *21/22*

U.S. Cl. 350—515 **1 Claim**



1. A binocular stereo-microscope comprising a right and left objective, a right and left eyepiece, a right porro prism arranged between said right objective and right eyepiece and a left porro prism arranged between said left objective and left eyepiece, each of said right and left porro prisms having a first, second, third and fourth reflecting surfaces, both said first and fourth reflecting surfaces being at 45 degrees to the plane vertical to the optical axis of the rays reflected by said first reflecting surface, said binocular stereo-microscope being arranged so that rays from an object pass through said objective and are reflected by said first, second, third and fourth reflecting surfaces in this order and an image formed by said rays is observed through said eyepiece, and said four reflecting surfaces being arranged to satisfy the relation expressed by the following formula:

$$\sin\beta\cos\omega-\cos\beta\tan(\beta-\nu)-\tan\alpha\sin\omega=0$$

$$[\omega=\omega_1+\omega_2 \text{ and } \nu=\omega_1-\omega_2]$$

$$\omega=\omega_1+\omega_2,\ \nu=\omega_1-\omega_2\neq 0,\ \alpha\neq 0 \text{ and } \beta\neq 0$$

wherein reference symbol ω_1 represents the angle between the plane vertical to the optical axis of said objective and the plane including the optical axis of the rays reflected by said second reflecting surface and directed toward said third reflecting surface, reference symbol ω_2 represents the angle between the plane vertical to the optical axis of the rays reflected by said second reflecting surface and directed toward said third reflecting surface and the plane including the optical axis of said eyepiece, reference symbol β represents the rotational angle of said porro prism in the clockwise direction from the plane including the optical axes of said objective and eyepieces around the optical axis of said objective, and reference symbol 2α represents the internal angle between said right and left objectives.

4,436,385

SPECIMEN HOLDER FOR INVERTED MICROSCOPES

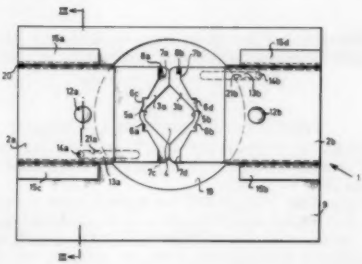
Horst Fischer, and Friedrich K. Möllring, both of Aalen, Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Jul. 24, 1981, Ser. No. 287,379

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1980, 3028154

Int. Cl.³ G02B *21/26*; B25B *5/02, 5/16*

U.S. Cl. 350—529 **8 Claims**



1. A specimen holder mounted on the stage of an inverted microscope for receiving specimens of different dimensions, characterized by the fact that the specimen holder (**1**) consists essentially of two plates (**2***a*, **2***b*) which are horizontally mounted for displacement with respect to each other, the two opposite sides of said plates having indentations (**5***a*, **5***b*) provided with steps (**3***a*, **3***b*) for disposing the specimens thereon, said indentations supplementing each other to form an opening (**4**) the dimensions of which can be varied by displacing the plates (**2***a*, **2***b*).

4,436,386

BINOCULARS HOUSING

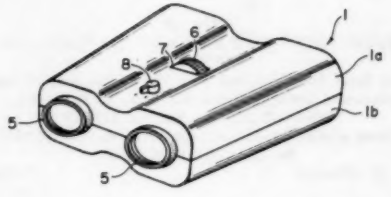
Isao Ishibai, and Kunimitsu Kobayashi, both of Toyko, Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Jul. 9, 1981, Ser. No. 281,627

Claims priority, application Japan, Aug. 27, 1980, 55-120507[U]

Int. Cl.³ G02B *23/18*

U.S. Cl. 350—550 **4 Claims**



1. A housing for binoculars comprising: upper and lower housing halves, said halves having objective lens frames and ocular lens frames integrally molded therewith; said objective lens frames and said ocular lens frames projecting outwardly from said upper and lower housing halves with a half of each of said frames being integrally molded with one of said halves and the other half of each of said frames being integrally molded with the other said housing halves and each of said frames having at least one projection formed integrally therewith and ring members each having at least one groove affixed to said objective lens frames and said ocular lens frames with said projections in said grooves for joining said upper and lower halves, said upper and lower halves, when assembled,

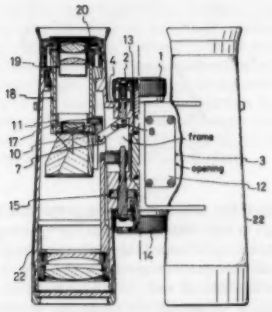
completely protecting left and right optical systems, a focusing mechanism, and an eyepiece adjustment mechanism of said binoculars.

4,436,387

LENS GROUP SHIFTING MECHANISM FOR ZOOM BINOCULARS

Fumio Shimizu, Minowa, Japan, assignor to Light Koki Co., Ltd., Nagano, Japan

Filed Dec. 24, 1981, Ser. No. 334,178
Claims priority, application Japan, Dec. 26, 1980, 55-183856
Int. Cl.³ G02B *7/06*
U.S. Cl. 350—556 **3 Claims**



1. In a zoom lens system including at least one outer cylinder having a longitudinal axis, a frame connected to said cylinder, and a lens group in said cylinder which is movable along said axis, a mechanism for longitudinally shifting said lens group comprising:

a lever having opposite ends and being pivotally mounted in the frame between said ends, each end having a rotatable pin mounted thereon;

a terminal member mounted on said lens group having a groove therein extending perpendicularly to said axis, one pin of one end of said lever riding in the groove;

a shift bar mounted in said frame movable only in parallel with said axis and having opposite ends, one end of said bar having a groove therein extending perpendicularly to said axis, the other pin of said lever riding in the groove; and

rotatable means in the frame for moving said shift bar longitudinally so that, upon such movement, the engagement of the pin in the groove of the bar pivots the lever so that the engagement of the other pin in the groove of the terminal members shifts the lens group longitudinally.

4,436,388

EYE-FUNDUS CAMERA PROVIDED WITH AUTOMATIC FOCUSING FUNCTION

Junichi Takahashi, Kawasaki; Toshio Sakane, Yokohama, and Yuji Itoh, Chigasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1981, Ser. No. 252,878
Claims priority, application Japan, Apr. 25, 1980, 55-55068
Int. Cl.³ A61B *3/14*
U.S. Cl. 351—206 **12 Claims**

1. An eye-fundus camera comprising:

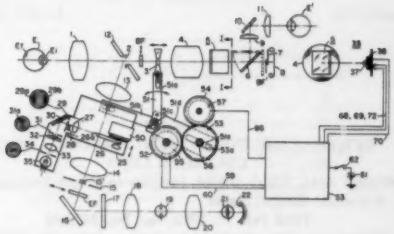
means for obtaining a picture of the fundus of an eye being examined and including illumination means for illuminating the fundus with an illumination light of wavelength within a first range, imaging optical means for forming an image of the illuminated fundus, photodetecting means for detecting the image, and focusing means for causing said optical means to focus the image on said detecting means;

mark forming means for forming a detection mark on the fundus with light of wavelength within the first range and light of wavelength within a second range different from the first range, operation of said mark forming means being coordinated with said focusing means;

photosensing means disposed in an optical path of said imaging optical means for sensing the detection mark reflected from the fundus;

filtering means for filtering the light incident on said photosensing means, said filtering means being able to cut off said light of wavelength within the first range and to transmit light of wavelength within the second range;

observation means disposed in an optical path of said imaging optical means for permitting an observer to observe



the fundus and the detection mark and also for providing a visual field for observation by the observer;

comparative mark providing means for providing a comparative mark locatable in the visual field for observation relative to the detection mark reflected from the fundus in a predetermined relation when said focusing means causes said optical means to focus the image on said photo-detecting means; and

control means for operating said focusing means and said mark forming means until the detection mark and the comparative mark are located in the predetermined relation, whereby

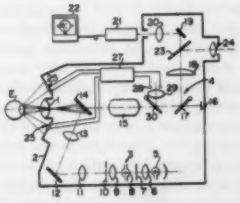
said focusing means causes said optical means to focus the image on said photo-detecting means.

4,436,389

OPHTHALMIC INSTRUMENT HAVING WORKING DISTANCE DETECTING MEANS

Eiichi Sano, Tokyo, Japan, assignor to Tokyo Kogaku Kikai Kabushiki Kaisha, Japan

Filed Jun. 25, 1980, Ser. No. 162,685
Claims priority, application Japan, Jun. 28, 1979, 54-81631
Int. Cl.³ A61B *3/14*; G03B *29/00*
U.S. Cl. 351—208 **8 Claims**



1. An ophthalmic instrument comprising objective lens means adapted to be located adjacent a patient's eye having a cornea with a working distance between the objective lens means and the patient's eye, an illuminating system including light source means and ring-shaped aperture means located substantially in conjugate with the patient's eye with respect to

said objective lens means so that illumination light is projected through said aperture means and said objective lens means to the patient's eye, working distance detecting means including light receiving means provided at a plurality of points around the objective lens means for detecting the location of a radially inner boundary of an image of said ring-shaped aperture means as produced around the objective lens means by the light projected from said illumination system and reflected at the cornea of the patient's eye, said light receiving means having means for detecting radial positions of at least a plurality of points of said radially inner boundary of the image to determine the working distance and the alignment between the optical axis of the eye an the optical axis of the instrument.

4,436,390

OPHTHALMIC INSTRUMENT HAVING A CROSS CYLINDER LENS

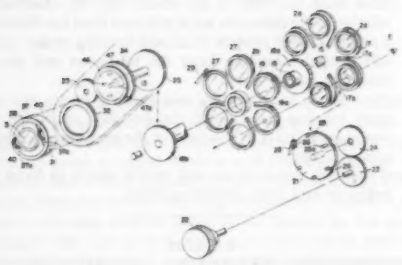
Mitsugu Aoki, Tokyo, Japan, assignor to Tokyo Kogaku Kikai Kabushiki Kaisha, Japan

Filed Feb. 11, 1982, Ser. No. 347,898

Claims priority, application Japan, Feb. 16, 1981, 56-20300[U]; Feb. 27, 1981, 56-26962[U]

Int. Cl.³ A61B *3/02*

U.S. Cl. 351—234 **9 Claims**



1. An ophthalmic instrument comprising cylindrical lens means and cross cylinder means which are adapted to be located in an examining optical path having an optical axis, housing means containing said cylindrical lens means and said cross cylinder means, swingable lever means mounted on said housing means for swingable movement about an axis substantially parallel with said optical axis of the optical path, said cross cylinder means being carried by said swingable lever means so that it can be moved into and out of said examining optical path in response to the swingable movement of the swingable lever means, said cross cylinder means including cross cylinder lens means having an intermediate axis, inner tube means supporting said cross cylinder lens means for rotation about said intermediate axis by an angle of 180°, and outer tube means supporting said inner tube means and mounted on said swingable lever means for rotation about an axis parallel with said optical axis, first rotatable disc means coaxial with said axis of swingable movement of said swingable member, first means for interconnecting said outer tube means with said first rotatable disc means so that a rotation of said outer tube means is transmitted to said first disc means, second means for interconnecting said first rotatable disc means with second rotatable disc means which is adapted to rotating said cylindrical lens means about said optical axis so that a rotation of said first means is transmitted to said second disc means.

4,436,391

APPARATUS FOR PROJECTING ANY SELECTED IMAGE IN A RECORDING MEDIUM HAVING IMAGES RECORDED THEREON IN AT LEAST TWO LINES

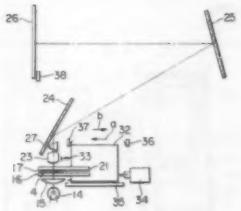
Kazuo Kashiwagi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1982, Ser. No. 410,450

Claims priority, application Japan, Sep. 12, 1981, 56-144138; Sep. 12, 1981, 56-144139

Int. Cl.³ G03B *23/12*

U.S. Cl. 353—26 R **15 Claims**



1. Apparatus for projecting on a projection surface any selected image in a recording medium having images recorded thereon in at least two lines, said apparatus comprising:

optical means for projecting on the projection surface any image in one line on said recording medium;

image rotating means for changing the orientation of the image projected on said projection surface;

line changing means for changing the line of images to be projected; and

means for driving said image rotating means in response to the operation of said line changing means.

4,436,392

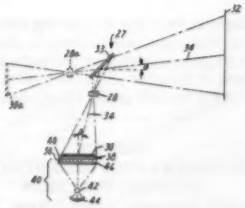
DISTORTION CORRECTION FOR AN OVERHEAD PROJECTOR SYSTEM

Dennis F. Vanderwerf, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 3, 1983, Ser. No. 455,424

Int. Cl.³ G03B *21/14*

U.S. Cl. 353—38 **6 Claims**



1. An overhead projector for projecting an undistorted image of a transparency onto a vertical projection surface at an oblique angle above a horizontal plane, comprising:

a horizontal stage upon which the transparency to be imaged is placed;

a projection lens having a predetermined optic axis oriented in a vertical plane and positioned on one side of said stage and offset from the center of said stage toward said projection surface along a line extending from the center of said stage and inclined toward said projection surface at an angle with respect to a vertical plane equal to said oblique angle;

lighting means disposed opposite said projection lens with

respect to said stage and including a light source having a predetermined optic axis oriented in a vertical plane for directing light toward said transparency and a condensing lens positioned between said light source and said stage and having a predetermined optic axis oriented in a vertical plane for directing light through said stage and said transparency and focusing said light at a focal position above the center of said stage so that light exiting said condensing lens is convergent at said focal position;

a Fresnel prism having a series of parallel, linear grooves oriented perpendicular to the direction of said offset of said projection lens, said grooves including inclined planar surfaces angled with respect to a horizontal plane at varying angles, said prism being disposed between said condensing lens of said lighting means and said stage for redirecting said convergent light focused by said condensing lens to a position along said line extending from the center of said stage and inclined toward said projection surface at an angle with respect to a vertical plane equal to said oblique angle, said position along said line corresponding to the position of said projection lens; and

a planar mirror disposed opposite said stage with respect to said projection lens to reflect light transmitted by said projection lens to said projection surface.

4,436,393

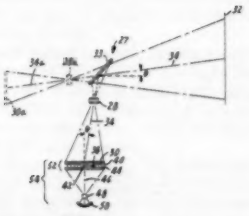
DISTORTION CORRECTION FOR AN OVERHEAD PROJECTOR SYSTEM

Dennis F. Vanderwerf, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 3, 1983, Ser. No. 455,425

Int. Cl.³ G03B *21/14*

U.S. Cl. 353—38 **4 Claims**



1. An overhead projector for projecting an undistorted image of a transparency onto a vertical projection surface at a selected oblique projection angle above a horizontal plane within a range of oblique projection angles, comprising:

a horizontal transparency stage upon which the transparency to be imaged is placed;

a projection lens having a predetermined optic axis oriented in a vertial plane, said lens being positioned above said stage and offset from the center of said stage toward said projection surface so that said lens will intersect a line extending from the center of said stage and inclined toward said projection surface at an angle with respect to a vertical plane equal to said selected oblique projection angle;

means for illuminating said transparency including a light source disposed below said stage and having a predetermined optic axis oriented in a vertical plane and intersecting the center of said stage;

means disposed between said means for illuminating said transparency and said stage for redirecting light produced by said light source to said projection lens at said angle to a vertical plane equal to said selected oblique projection angle including a first annular Fresnel lens parallel to said stage and having a predetermined optic axis oriented in a vertical plane and coincident with said optic axis of said light source and disposed between said light source and said stage, and a second annular Fresnel lens parallel to said stage and having a predetermined optic axis oriented in a vertical plane and displaced from said optic axis of said first annular Fresnel lens and said optic axis of said light source in the direction of said offset of said projection lens, and first and second annular Fresnel lenses cooperating to focus light produced by said light source at said offset position of said projection lens; and

a mirror disposed adjacent said projection lens for reflecting light exiting said projection lens toward said projection surface at said oblique projection angle.

4,436,394

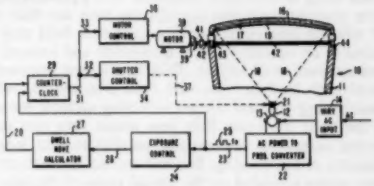
SYSTEM AND METHOD FOR CONTROLLING THE EXPOSURE OF COLOR PICTURE TUBE PHOSPHOR SCREENS

William R. Kelly, and Ernesto J. Alvero, both of Lancaster, Pa., assignors to RCA Corporation, Princeton, N.J.

Filed May 28, 1981, Ser. No. 267,750

Int. Cl.³ G03B *41/00*

U.S. Cl. 354—1 **10 Claims**



1. In a lighthouse employed for exposing an actinic energy sensitive coating present on the inside surface of a picture tube panel and having an actinic energy source and a power supply for energizing said energy source, an improved system for maintaining a constant energy intensity-time relationship comprising:

means directly responsive to the energizing power provided to said actinic energy source for providing an output signal having a characteristic related to the intensity of said energy source;

means responsive to said output signal for providing a control signal, said control signal having a frequency determined by said output signal characteristic; and

means responsive to said control signal for controlling the exposure of said actinic energy sensitive coating in accordance with said control signal frequency, said means responsive to said control signal including means for providing a reference signal representative of a reference frequency and means receiving said reference signal and said control signal frequency for providing a signal related to the ratio of said reference frequency and said control signal frequency.

4,436,395

FOCUS DETECTING DEVICE IN A SINGLE LENS REFLEX CAMERA

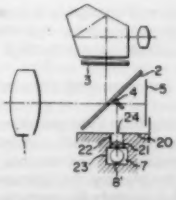
Toru Fukuhara, Isehara, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Feb. 1, 1982, Ser. No. 344,728

Claims priority, application Japan, Feb. 6, 1981, 56-15830[U]; Feb. 13, 1981, 56-18185[U]

Int. Cl.³ G03B *3/00, 19/12*

U.S. Cl. 354—406 **2 Claims**



1. In a single lens reflex camera including a housing, a main reflecting mirror capable of partially transmitting incident

light therethrough and disposed in a light path passing through a mirror box provided between an objective lens and a film surface so as to direct a light beam passing through said objective lens to a viewfinder optical system, an auxiliary reflecting mirror for reflecting the light transmitted through said main reflecting mirror toward a predetermined wall surface of said mirror box lying at a location opposed to said viewfinder optical system with said main reflecting mirror interposed therebetween, and an optical device for detecting the focused condition of said objective lens with respect to an object to be photographed, the housing having a lengthwise dimension perpendicular to the optical axis of the objective lens that is greater than its dimension in the direction of the optical axis, the improvement wherein said mirror box is formed with a depression in said predetermined wall surface and said optical device is disposed in the depression, said predetermined wall surface being substantially coincident with a pre-imaging plane of the objective lens that is conjugate with said film surface, and wherein said optical device comprises field stop means formed at an opening of said depression and located in said predetermined wall surface, field lens means disposed in an optical path leading from said field stop means, reflecting means having first and second reflecting surfaces for separating the light from said field lens means into two mutually opposed directions substantially parallel to said lengthwise dimension of the housing, first and second photoelectric converter means provided on the optical paths of the light beams separated by said first and second reflecting surfaces and spaced along the lengthwise dimension of the housing, the distance between said reflecting means and each of said photoelectric converter means along said lengthwise dimension being substantially greater than the distance between said pre-imaging plane and said reflecting means, and a pair of re-imaging lens means disposed in the optical paths leading from said reflecting means to said first and second photoelectric converter means for forming first and second images on said first and second photoelectric converter means, respectively, from an image formed by said objective lens at said pre-imaging plane.

4,436,396

ELECTROFLASH UNIT

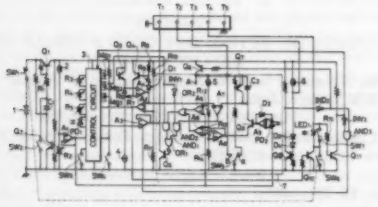
Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 358,836, Mar. 16, 1982, abandoned. This application Jun. 8, 1983, Ser. No. 501,545

Claims priority, application Japan, Mar. 23, 1981, 56-40505; Mar. 23, 1981, 56-40503

Int. Cl.³ G03B *15/05*

U.S. Cl. 354—416 **28 Claims**



1. An electroflash unit attachable to a camera having means for measuring light received through a photographing lens thereof, said electroflash unit comprising:

a power source;

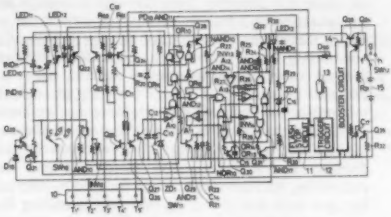
terminal means for connecting the electroflash unit to the camera;

means for effecting flash light emission;

means for terminating said flash unit emission;

means for generating, on said terminal means, a predetermined signal for plasting the light measuring means in a state in which it is ready for operation; and

selection means for alternately selecting a first mode in which flash light emission is terminated in accordance with an output from said light measuring means or a second mode that is different from said first mode, and wherein said signal generating means generates said predetermined signal upon power being supplied to the electroflash unit from said power source and upon said first mode being selected by said selection means.



4,436,397

PHOTOGRAPHIC INFORMATION DISPLAY SYSTEMS FOR USE IN PHOTOGRAPHIC CAMERAS

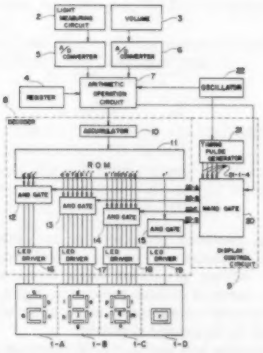
Takeo Kobayashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1982, Ser. No. 363,006

Claims priority, application Japan, May 28, 1981, 56-81297

Int. Cl.³ G03B *17/20*

U.S. Cl. 354—465 **7 Claims**



1. A photographic information display system of a photographic camera having a finder comprising:

(a) a plurality of digits arranged in a field of view of said finder,

(b) an arithmetic operation circuit inputted with digital photographic information for producing digital code bits,

(c) a memory circuit for storing outputs of said arithmetic operation circuit,

(d) a timing pulse generator supplied with the output signal of an oscillator for producing successively lagged pulse signals,

(e) a NAND gate circuit supplied with the output signal of said arithmetic operation circuit and the pulse signals outputted by said timing pulse generator for judging whether a photographic information outputted by said arithmetic operation circuit is adequate or not for outputting successively lagged pulse signals,

(f) AND gate circuits of a number corresponding to that of said digits and respectively supplied with binary informations read out from said memory circuit and said lagged pulse signals outputted by the NAND gate circuit, and

(g) digit drivers respectively supplied with binary informa-

tions outputted from said AND gate circuits for driving said digits,

whereby sequentially to turn on or off said digits at a predetermined period for giving an alarm to a user of said photographic camera.

4,436,398

DEVICE FOR SPLITTING PART OF LIGHT INCIDENT ON AN IMAGE FORMING OPTICAL SYSTEM

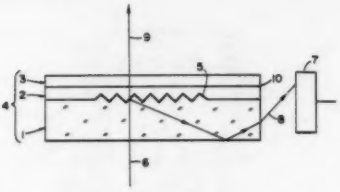
Kiyonobu Endo, and Noriyuki Nose, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 280,347, Jul. 6, 1981, abandoned. This application Mar. 22, 1983, Ser. No. 476,398

Claims priority, application Japan, Jul. 25, 1980, 55-101909

Int. Cl.³ G03B *13/08;* G02B *5/02*

U.S. Cl. 354—476 **5 Claims**



1. A device for splitting part of the light incident on an image forming optical system, comprising:

a transparent substrate having a surface on which a periodic relief is formed; and

a transparent filling layer filling up completely said relief surface of said transparent substrate to form a relief type diffraction grating therein,

whereby said relief type diffraction grating serves to separate N_0-th order of reflected diffraction light ($N_0 \geqq 2$) out of the optical path of said incident light, each of the transmitted diffraction light beams of orders lower than the N_0-th order, except for zero order, having a diffraction efficiency not more than 6%.

a photodetector disposed outside of the optical path of said incident light for detecting the N_0-th order of reflected diffraction light beam which has been diffracted at said relief type diffraction grating.

4,436,399

APPARATUS FOR TRANSPORTING OR POSITIONING OF A STRIP-SHAPED LIGHT-SENSITIVE MATERIAL WITH REFERENCE TO A PICTURE WINDOW

Carl Koch, Im Santenbühl No. 82, Stetten, and Karl Gfeller, Kirchweg 120, Langwiesen, both of Switzerland

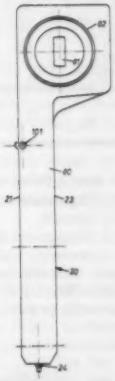
Continuation-in-part of Ser. No. 404,421, Jul. 28, 1982, abandoned, which is a continuation of Ser. No. 161,647, Jun. 20, 1980, abandoned. This application Aug. 27, 1982, Ser. No. 412,376

Claims priority, application Switzerland, Jun. 2, 1979, 5794/79

Int. Cl.³ G03B *17/02*

U.S. Cl. 354—159 **24 Claims**

1. A device for use in making photographic exposures on a strip-shaped, light-sensitive material, said device comprising a housing having a picture area-limiting frame providing a fixed light-path opening, means for guiding the strip-shaped light-sensitive material within the housing and behind the light-path opening, a transport arrangement for the forward transport of the strip-shaped material in steps in its longitudinal direction, at least one adjustable mask for covering portions of the light-path opening to thereby form a picture window which is smaller than the light-path opening, the portions of the light-path opening which can be covered by the mask adjoining opposite edges of the light-path opening that are at right angles to the longitudinal direction of the strip-shaped material so that a first edge of the picture window as well as a second edge of the picture window as seen with respect to the forward transport direction of the strip-shaped material are alterable in position by displacement of the mask, adjustable means for selecting a desired picture window as to its size and/or position within the picture area, first mechanical-electrical transducer means coupled with said means for selecting the picture window for producing electrical signals in response to the selected picture window, second mechanical-electrical transducer means associated with said transport arrangement for producing electrical signals in response to any displacement of the strip-shaped material in its longitudinal direction, at least one electronic logical circuit arrangement having a plurality of signal inputs and outputs, said first and second transducer means being electrically connected with some of the signal inputs of said electronic logical circuit arrangement, and electrically-operated transport control means associated with the



transport arrangement for the strip-shaped material, said transport control means being connected with some of the signal outputs of the logical circuit arrangement, said logical control arrangement being connected to deliver to said transport control means output signals dependent on the signals from said first and second transducer means for controlling the transport arrangement such that the steps of forward transport caused by the transport arrangement for the strip-shaped material area automatically limited in accordance with the size of the picture window defined by the mask and such that each adjustment of the means for selecting the picture window, which calls for a positional change of the second edge of the picture window in the forward transport direction of the strip-shaped material, automatically produces a forward correction transport of the strip-shaped material at least equal to said positional change.

4,436,400

APPARATUS FOR POSITIVE VIGNETTING

Phillip S. Charis, 2631 Buenos Aires, Covina, Calif. 91724, and Roy Sweeney, Pasadena, Calif., assignors to Phillip Stewart Charis, Pasadena, Calif., a part interest

Filed Dec. 3, 1981, Ser. No. 326,859

Int. Cl.³ G03B *11/00*

U.S. Cl. 354—296 **4 Claims**

1. A positive vignetting apparatus for positioning between a camera lens and a subject to be photographed to allow the addition of lighting to the peripheral region of a photographic image of the subject without interference with the central subject region thereof comprising:

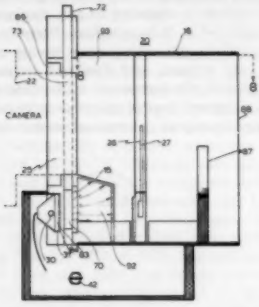
a housing for positioning between the lens of a camera and the subject to be photographed;

said housing including a direct optical path therethrough between the subject and the lens of the camera with which the apparatus is associated, said optical path being free of optical elements in the region of the optical path directed at the subject;

vignetting means for partially obstructing a portion of the direct optical path between the subject and the lens of said camera;

an auxiliary light source contained within said housing and positioned between said vignetting means and the lens of said camera;

means shielding the lens of the camera from direct exposure to said auxiliary light source;



said auxiliary light source being operative to illuminate the face of said vignetting means on the side thereof exposed to the lens of said camera;

whereby said lens is illuminated directly by light from said subject without intervening optical elements in a portion of the optical path between the subject and the camera lens is illuminated indirectly at peripheral regions of the optical path to provide positive vignetting of the peripheral regions thereof.

4,436,401

TANK WITH LIGHT-TIGHT CLOSURE

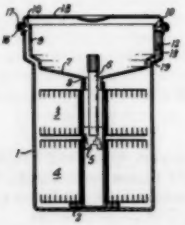
Eric Taylor, London, England, assignor to Paterson Products Limited, London, England

Filed Mar. 30, 1982, Ser. No. 363,583

Claims priority, application United Kingdom, Apr. 7, 1981, 8110891

Int. Cl.³ G03D *13/04*

U.S. Cl. 354—312 **4 Claims**



1. In a developing tank comprising a base member having the form of a hollow, generally cylindrical upwardly open tank, a film strip receiving member adapted to fit inside the tank and comprising a central spindle and a film-support mounted thereon, the film-support including a pair of spaced apart discs having on their facing surfaces spiral grooves for the reception of a film-strip, the tank additionally including a closure member adapted to close the upwardly open tank base in light-tight fashion, the improvement comprising a substantially funnel shaped closure member which extends across the entire width of the tank and has on its external periphery means which constitute, together with cooperating means on the interior cylindrical surface of the walls of the tank, a bayonet fitting comprising at least one bead on the interior of the tank base and at least one bead and stop formation located on the exterior of the closure member to enable the closure member to be latched into a position in which it cannot be axially extracted from the base.

4,436,402

COPYING MACHINE

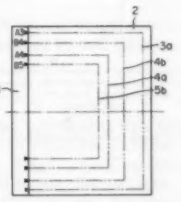
Ryubun Seimiya; Fumio Iwai, and Isao Nosaka, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1980, Ser. No. 205,694

Claims priority, application Japan, Nov. 12, 1979, 54-145514

Int. Cl.³ G03G *15/04*

U.S. Cl. 355—3 R **1 Claim**



1. In an electrophotographic copying machine of the type in which an original placed upon a copy board is scanned and its image projected upon a photosensitive surface, and in which the effective distance between said original and the photosensitive surface may be varied depending upon the size of the original to be scanned, the improvement comprising indexing means on said copy board indicating the placement of the original to be scanned relative to a central base line, said indexing means being so dimensioned that the shorter side of the original always corresponds to the direction of scanning.

4,436,403

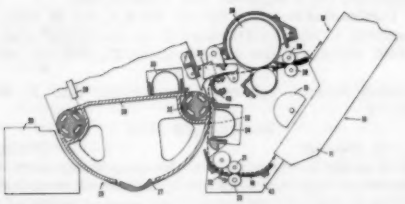
GUIDANCE CORRECTION METHOD AND APPARATUS FOR COPY PAPER PATH IN A COPIER

John H. Rhodes, Jr., and Alfonso A. Rosati, both of Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1982, Ser. No. 385,592

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 SH **7 Claims**



1. In a copier having first means for driving copy sheets through an image transfer station and thence into second driving means such as fuser rollers and the like for withdrawing the copy sheets from the transfer station and wherein the copy sheet follows a curved path between said transfer station and said second driving means, an improvement comprising:

a bender bar having at least a portion of the surface thereof formed as an elongated edge; and

means mounting said bender bar with said edge forming an

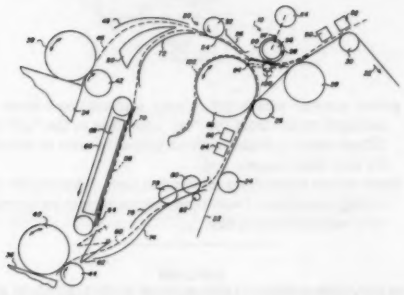
inner guide for copy sheets passing through said curved path, said mounting means including means establishing different path lengths as between opposite ends of said bar for copy sheets traveling from said image transfer station to said second driving means, whereby said path length establishing means compensates for twisting motions to copy sheets which cause distortion and blurring in image transfer to the copy sheets.

4,436,404

SHEET HANDLING APPARATUS

William J. Simmons, and Richard Tinder, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 8, 1981, Ser. No. 309,733
Int. Cl.³ G03G *15/14, 15/22*
U.S. Cl. 355—3 SH **15 Claims**



1. Sheet handling apparatus comprising:

means for defining first and second convergent paths along which sheets are moved seriatim;

means located adjacent to said first path near the convergence of said first and second paths for engaging sheets moved along said first path, said means being moveable into and out of said first path;

guide means located adjacent to said engaging means for guiding a sheet moved along one of said paths, said guide means being moveable between a first position adjacent to said first path and a second position adjacent to said second path; and

means (1) for moving said guide means to said first position and for latching said engaging means so that it extends into said first path to engage a sheet moved along said first path; and (2) for moving said guide means to said second position, and for latching said engaging means so that it is held remote from said first and second paths.

4,436,405

APPARATUS AND METHOD FOR REGISTERING RELATED TRANSFERABLE IMAGES IN ACCURATE SUPERPOSITION ON A RECEIVER MEMBER

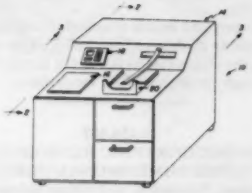
Robert J. Kindt, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,238
Int. Cl.³ G03G *15/01*
U.S. Cl. 355—3 TR **12 Claims**

1. In an electrographic copier having means for forming related transferable images at spaced locations on image-carrier means movable along a travel path, means for stopping such image-carrier means to position one transferable image at a predetermined location in said path, and transferring means mounted adjacent to said path and movable relative to such stopped image-carrier means for transferring a transferable image from such image-carrier means to a receiver member, the improvement comprising:

means for clamping a receiver member to said stopping means; and

means, operatively associated with said transferring means, for (i) positioning such clamped receiver member, during movement of said transferring means, in transfer relation with such one transferable image on the stopped image-carrier means, and following transfer of such one transferable image, (ii) removing such receiver member from such



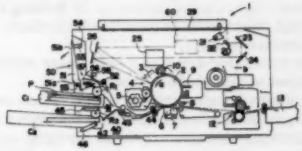
transfer relation while keeping such receiver member clamped to said stopping means so that such image-carrier means can be stopped to position another related transferable image at said predetermined location, whereat such receiver member has the same position relative to such other related transferable image as it had to such one transferable image, whereby such related images when transferred are in accurate superposed register on such receiver member.

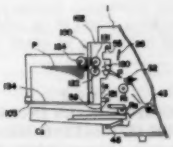
4,436,406

PAPER FEEDER FOR RECORDING APPARATUS

Hiroshi Murasaki, Sakai; Masaya Ogawa, Osaka; Yuji Enoguchi, Higashiosaka, and Mikio Masui, Itami, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 21, 1982, Ser. No. 390,624
Claims priority, application Japan, Jun. 30, 1981, 56-102668
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 SH **14 Claims**





1. The combination of:

a recording apparatus having a main body with means for driving the apparatus therein, an automatic feed mechanism therein including paper storage means and means for automatically feeding recording paper from said storage means, and a manual feed mechanism for feeding into said apparatus recording paper manually inserted thereinto;

a paper feeder for supplying recording paper into the interior of the record apparatus and comprising a recording paper accommodating unit for accommodating a larger number of sheets of recording paper than the paper storage means of the automatic feed mechanism, said unit having means for feeding the recording paper out of the

unit, and releasable engaging means for removably attaching the unit to said main body with the feeding means positioned in a position opposed to said manual feed mechanism of the apparatus for delivering sheets of recording paper to said manual feed means;

holding means on said main body and engagable with said engaging means for holding said unit; and

coupling means for coupling said apparatus driving means and said feeding means when said unit is attached to said main body;

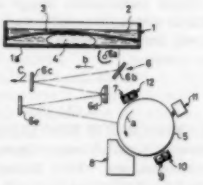
whereby when said unit is attached to said main body with a multiplicity of sheets of recording paper accommodated therein, the sheets can be fed to the interior of the apparatus through the manual feed mechanism.

4,436,407

ELECTROPHOTOGRAPHIC REPRODUCTION OF A THREE-DIMENSIONAL OBJECT

Toyokazu Satomi, Yokohama, and Nobuo Sakuma, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Jan. 25, 1982, Ser. No. 342,487
Claims priority, application Japan, May 25, 1981, 56-79044
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—11 **8 Claims**



1. An electrophotographic copying machine capable of making a two-dimensional copy either from a two-dimensional or three-dimensional object comprising:

holder means having a holding surface for holding a two-dimensional object on said surface or for holding a three-dimensional object extending above said surface;

a photosensitive member;

an optical system for directing a light image reflected from said object to said photosensitive member;

adjusting means for adjusting said optical system to maintain a conjugate image forming relation between a field of a focal distance coincident with said holding surface and said photosensitive member, and between a field of a focal distance at a selected height above said holding surface and said photosensitive member; and

electrophotographic processing means including charging means and developing means to be applied to said photosensitive member in forming an image thereon.

4,436,408

IMAGE FORMING APPARATUS INCLUDING POWER SWITCH OPERATING MEANS

Tsuneki Inuzuka, Machida; Masato Ishida, Kawasaki; Hiroshi Tanioka, Tokyo, and Hisashi Sakamaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1980, Ser. No. 219,975
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **8 Claims**

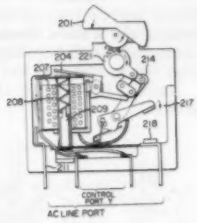
1. Copying apparatus comprising:

process means for forming a visible image on a copy material;

process control means for operatively controlling said process means;

a manual power switch unit for supplying power to electric loads of said process means and said process control means, said manual power switch unit including switch contacts and manually activated actuator means to maintain an "on" condition of said contacts during the time from the beginning of manual turning on to activating of manual turning off, and said power switch unit further including a coil to release the "on" condition of said actuator means before the manual activation thereof to turn "off" said contacts;

timer means for measuring the time lapse from completion of copying operation, said timer means being controlled by said process control means;



power control means for driving said coil to release said actuator means from the "on" condition to the "off" condition when a predetermined period of time is measured by said timer means; and

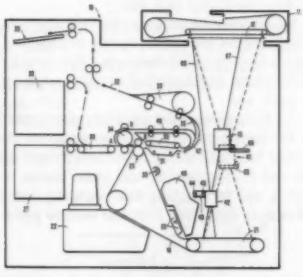
input means comprising instruction keys, wherein the measuring operation of said timer means is reset by operation of a said instruction key.

4,436,409

FILE COMPACTION APPARATUS AND METHOD FOR COPIERS

Carl A. Queener, Lyons, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1981, Ser. No. 335,932
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **17 Claims**



1. In an apparatus having a photosensitive surface for electrostatically recording images and means synchronously moving copy sheets relative to the photosensitive surface for transferring images corresponding to the electrostatically recorded images to a copy sheet at a transfer station, an improvement for recording a plurality of original document images on a single copy sheet comprising:

original document image producing means for producing a light image at the photosensitive surface with said light image being no greater than half the size of the surface area of the copy sheet,

means controlling the orientation of said light image on said photosensitive surface with respect to the synchronous movement of the copy sheet for causing said light images corresponding to sequential original document images to

be transferred to the copy sheet on separate portions of the surface area thereof in a predetermined sequence, and

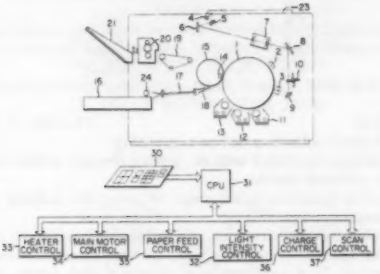
means selectively operable for commanding said controlling means to initiate image production at the photosensitive surface at a location other than the first location of the predetermined sequence.

4,436,410

IMAGE FORMING APPARATUS

Yutaka Komiya, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1982, Ser. No. 368,675
Claims priority, application Japan, Apr. 20, 1981, 56-58585
Int. Cl.³ G03G *15/01, 15/04*
U.S. Cl. 355—14 E **11 Claims**



8. A color image forming apparatus having a variable magnification ratio copy function comprising:

specifying means for specifying a magnification ratio of an image to be formed on a record medium;

image forming means for forming a color image on said record medium at the magnification ratio specified by said specifying means, said image forming means including exposure means for exposing an original and a plurality of spectrometric means for selection to color-decompose light from said original; and

control means for controlling said exposure means in accordance with the magnification ratio specified by said specifying means and the selected one of said plurality of spectrometric means, wherein said control means corrects the light intensity by controlling a voltage applied to said exposure means.

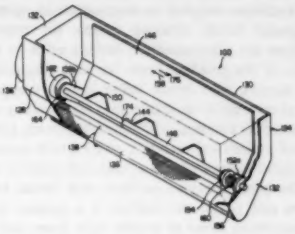
4,436,411

TONER DISPENSER AND DETECTOR FOR AN ELECTROSTATIC COPYING APPARATUS

Hideo Miyoshi, Habikino; Tadashi Umeda, Yamato Takada, and Takashi Aoki, Kusatsu, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Division of Ser. No. 250,829, Apr. 3, 1981, Pat. No. 4,382,674. This application Feb. 8, 1983, Ser. No. 465,062
Claims priority, application Japan, Apr. 15, 1980, 55-49497
Int. Cl.³ G03G *15/08*
U.S. Cl. 355—14 D **12 Claims**

1. In a developing device for an electrostatic copying apparatus, said developing device comprising a developer receptacle, a developer applicator mechanism for holding a part of a developer in the receptacle on its surface and applying toner particles to a latent electrostatic image to be developed, and a toner particle dispenser mechanism, said toner particle dispenser having a toner particle receptacle with an open bottom and a feed roller disposed rotatably at the opening of the toner particle receptacle and adapted to dispense the toner particles in the toner particle receptacle to the developer receptacle; the improvement wherein a slide plate capable of reciprocating in the widthwise direction along the inner surface of at least one



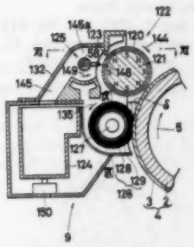
side wall of the toner particle receptacle is mounted to at least the lower portion of the inner surface of said side wall.

4,436,412

CLEANING DEVICE FOR USE ON AN ELECTROSTATIC COPYING APPARATUS

Ryutaro Yamagata, Hyogo; Nobuhiko Kozuka, Osaka; Hitoshi Nishihama, Osaka; Shigeo Koyama, Osaka, and Kazutada Sakai, Osaka, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed May 20, 1981, Ser. No. 265,565
Int. Cl.³ G03G *21/00*
U.S. Cl. 355—15 **8 Claims**



1. A cleaning device for use in a transfer type electrostatic copying apparatus for removing residual magnetizable toner from a photosensitive surface of the copying apparatus after an operation of transfer of an electrostatic latent toner image from the photosensitive surface, said cleaning device comprising:

magnetic brush cleaning means, adapted to be positioned adjacent the photosensitive surface at a downstream position with respect to the position of a transfer operation, for magnetically removing residual toner from the photosensitive surface, said magnetic brush cleaning means comprising a permanent magnet member fixedly positioned within a hollow sleeve which is formed of a non-magnetizable material and which is rotatable adjacent the photosensitive surface, such that there is formed on the peripheral surface of said sleeve a magnetic brush of toner removed from the photosensitive surface;

a restricting member positioned adjacent said sleeve for restricting the length of the bristles of said magnetic brush formed on said peripheral surface;

a toner receptacle for receiving toner removed from the photosensitive surface by said magnetic brush cleaning means, said receptacle being mounted for downward movement as the weight of toner accumulated in said receptacle increases;

switch means positioned with respect to said receptacle to be actuated thereby when the weight of toner accumulated

therein has reached a predetermined value and thereby to provide an indication of such accumulation;

feed-in means for forcibly feeding said removed toner to said receptacle means; and

brush roller means, adapted to be positioned upstream of said magnetic brush cleaning means, for removing a charge from the photosensitive surface prior to removal therefrom of the residual toner by said magnetic brush cleaning means, said brush roller means comprising a cylindrical member formed of a light transmitting material and mounted for rotation, a charge eraser lamp positioned within said cylindrical member, and a brush arranged on the peripheral surface of said cylindrical member to brush against the photosensitive surface, said brush being arranged on said peripheral surface in a manner to define light transmitting areas to enable light from said charge eraser lamp to pass through said brush onto the photosensitive surface.

4,436,413

MAGNETIC BRUSH DEVELOPING APPARATUS

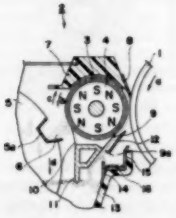
Tateki Oka, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 1, 1982, Ser. No. 413,724

Claims priority, application Japan, Sep. 11, 1981, 56-145650

Int. Cl.³ G03G *15/08*

U.S. Cl. 355—15 **7 Claims**



1. A magnetic brush developing apparatus comprising a developing sleeve made of a nonmagnetic material, a magnetic roller rotatably mounted within said developing sleeve, means for supplying a magnetic developer onto the peripheral surface of said developing sleeve, drive means connected to said magnetic roller for rotating said magnetic roller to transport the supplied developer along the peripheral surface of said developing sleeve, a developer scraping member made of a nonmagnetic material and having a free end engaged with said developing sleeve for scraping developer off the peripheral surface of said developing sleeve and guiding the developer along a guide surface on said scraping member in a direction away from the surface of said developing sleeve, and a foreign material separating member made of a magnetic material and disposed within a region which is subject to the magnetic action of said magnetic roller and having an edge opposed to said magnetic roller around which an alternating magnetic field is set up when the magnetic roller is rotated, whereby said alternating magnetic field agitates the developer which is scraped off the peripheral surface of the developing sleeve for separating foreign material therefrom.

4,436,414

TONER COLLECTION DEVICE

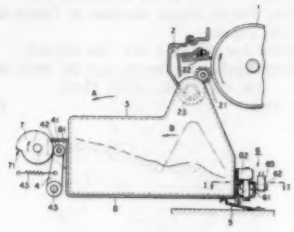
Shin-ichi Kamiyama, Yokohama, and Yutaka Hasegawa, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Sep. 21, 1982, Ser. No. 420,864

Claims priority, application Japan, Sep. 25, 1981, 56-152327; Sep. 25, 1981, 56-152328; Sep. 25, 1981, 56-152329

Int. Cl.³ G03G *15/08*

U.S. Cl. 355—15 **10 Claims**



1. A toner collecting device comprising:

a container provided with an opening through which toner is collected therein;

a holder generally in the shape of a tray for holding said container; and

rocking means for rocking said holder back and forth such that said holder moves at an accelerated speed while being rocked in a predetermined direction and moves at a slower speed while being rocked back to the original position.

4,436,415

EXPOSURE PROCESS FOR USE IN A VARIABLE MAGNIFICATION COPYING MACHINE

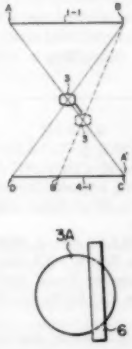
Masami Emoto, Kanagawa, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Dec. 21, 1981, Ser. No. 332,872

Claims priority, application Japan, Dec. 22, 1980, 55-181648

Int. Cl.³ G03B *27/52*

U.S. Cl. 355—55 **24 Claims**



1. An exposure process for use in a variable magnification copying machine in which a photosensitive member is subject to a slitwise exposure progressively in accordance with a scan direction normal to a lengthwise direction of an exposure slit, and an imaging lens system having an optical axis therefor being movable in the scan direction in conjunction with said progressive slitwise exposure and being displaceable in accordance with a particular magnitude of copying magnification

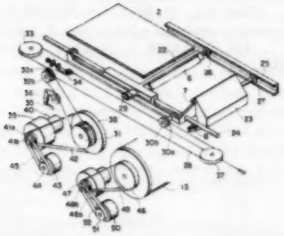
which is utilized during a copying operation, the exposure process comprising the steps of providing at least one rectangular light shield member adjacent to the end face of a lens and oriented so that its lengthwise direction corresponds to said scan direction, the light shield member being integral with the imaging lens system as the latter is displaced, the light shield member being disposed so that it is wedged partly into an exposure light flux as viewed in the lengthwise direction of the exposure slit when the light shield member is to intercept light, and changing the extent of intercepting the exposure light flux by the light shield member as a copying magnification is changed, whereby the distribution of exposure light in the lengthwise direction of the exposure slit is made uniform.

4,436,416

MIRROR SCANNING CONTROL MECHANISM IN VARIABLE MAGNIFICATION TYPE COPYING MACHINE

Ikuo Negoro, and Hisao Iwanade, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1981, Ser. No. 326,977
Claims priority, application Japan, Dec. 11, 1980, 55-174989
Int. Cl.³ G03B *27/34, 27/40, 27/70*
U.S. Cl. 355—57 **12 Claims**



1. In a copying machine of the type having means for holding an original document in a substantially fixed position, a full speed mirror, movable a scanning distance which is at least the length of said original at a scanning speed for reflecting light from said original, half-speed mirrors movable in synchronism with said full speed mirror at substantially half the speed thereof for receiving and reflecting said light from said full speed mirror, a magnification varying device including a zoom lens system for receiving said reflected light from said half-speed mirrors and for varying the magnification factor of said copy machine, and a recording medium for receiving said light from said magnification varying device and recording an image of said original with a desired magnification factor, a mirror scanning control mechanism comprising:

control means for controlling said scanning speed in accordance with at least said desired magnification factor.

4,436,417

BEAM DIRECTOR FOR OPTICAL RANGING SYSTEM

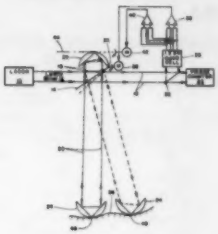
Richard A. Hutchin, Marlboro, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Apr. 14, 1982, Ser. No. 368,335
Int. Cl.³ G01G *9/02*
U.S. Cl. 356—4.5 **4 Claims**

1. An optical ranging system, comprising:

a. first and second reflectors, the distance between which is being measured optically;

b. means for introducing a beam of radiation between said first and second reflectors such that the radiation beam is reflected therebetween, including a steering beam splitter positioned obliquely in the radiation beam between the first and second reflectors with the beam of radiation being introduced obliquely onto the beam splitter and a portion of the beam being reflected by the beam splitter onto the first reflector which reflects it back through the beam splitter onto the second reflector which reflects it back onto the beam splitter where it interferes with the radiation beam being initially introduced onto the beam splitter, said beam splitter being rotatable about at least a



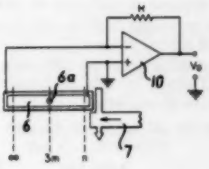
first axis substantially perpendicular to the radiation beam reflected between the first and second reflectors for steering the beam between the reflectors to compensate for relative movements therebetween, such that translation of the steering beam splitter in any direction does affect the optical path difference between the reflectors.

4,436,418

DISTANCE DETECTOR DEVICE

Yukio Morino, Shikawatashi, Japan, assignor to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 4, 1981, Ser. No. 299,528
Claims priority, application Japan, Sep. 8, 1980, 55-124268
Int. Cl.³ G01C *3/10;* **G03B** *7/08*
U.S. Cl. 356—1 **7 Claims**

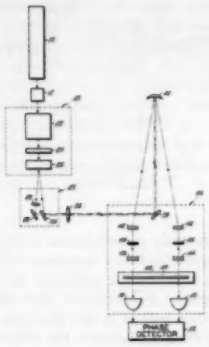


1. A distance detector device comprising: light projecting means for projecting light toward an object whose distance is to be measured, said light projecting means comprising a light emitting element and a light projecting lens for projecting light from said light emitting element; image forming means for receiving reflected light from the object whose distance is to be measured and for forming an image thereof; a light sensitive element positioned at an image forming part of said image forming means for developing a photoelectric output in response to light incident thereon; a light-blocking shade movable over a surface of said light sensitive element to vary its position along the length of said light sensitive element and accordingly vary the photoelectric output thereof in dependence upon the distance to the object whose distance is to be measured; and a sensor circuit for sensing a variation of the photoelectric output of said light sensitive element caused by shielding of the light reflected from the object whose distance is to be measured when said shade is operated.

4,436,419
OPTICAL STRAIN GAUGE

Karl A. Stetson, Coventry, and Irene R. Harrison, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 16, 1982, Ser. No. 349,238
Int. Cl.³ G01B 9/02
U.S. Cl. 356—35.5 1 Claim



1. An optical system for measuring strain in a test object comprising:

means for generating first and second optical beams having first and second frequencies;

means for directing said first and second beams on said test object;

at least two means for focusing radiation of said first and second frequencies diffusely reflected from said test object onto a focus plane;

a predetermined moire interference pattern recording positioned in said focus plane to intercept said focused radiation, said moire pattern representing an exposure when the amount of said strain is zero;

at least two detectors responsive to radiation focused by said at least two means for focusing for generating electrical signals in response to radiation of said first and second frequencies impinging thereon, said electrical signals having first and second phases;

means for measuring the phase difference between said first and second phases of said electrical signals to form a representation of said strain.

4,436,420
OPTICAL FLUID ANALYZING APPARATUS AND METHOD

Steven W. Depp, and Glenn T. Sincerbox, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1981, Ser. No. 307,269
Int. Cl.³ G01N 21/41
U.S. Cl. 356—128 7 Claims

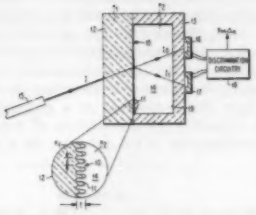
1. An optical fluid analyzing apparatus comprising:

transparent means having a known refractive index and defining between first and second portions thereof a cell for receiving a fluid sample having an unknown refractive index, said first portion having a diffraction grating formed on an inner surface facing the cell;

a light source positioned at an incident angle with said grating to satisfy the Bragg condition;

first detector means for sensing the intensity of the light from said source that has been diffracted by said grating through the sample;

second detector means for sensing the intensity of the light from said source that has been transmitted by said grating through said second transparent portion; and

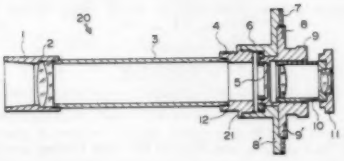


means responsive to signals generated by said first and second detector means for providing an output related to the refractive index of the sample.

4,436,421
POLARIS AXIS FINDER

Kozaburo Suzuki, Saitama, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1981, Ser. No. 298,141
Claims priority, application Japan, Sep. 3, 1980, 55-125506[U]
Int. Cl.³ G01B 11/26; G01C 17/34
U.S. Cl. 356—153 13 Claims



1. A polar axis finder for an equatorial mounting telescope, comprising:

an objective lens;

a focus mirror disposed at a focal point of said objective lens, said focus mirror being rotatable about an axis of rotation and having a Polaris collimating mark thereon which is asymmetrically disposed with respect to said axis of rotation;

a date scale;

a time scale fixedly secured for rotation with said focus mirror relative to said date scale; and

an eyepiece for viewing an image of Polaris via said objective lens and focus mirror.

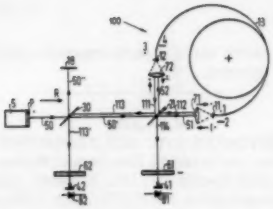
4,436,422
SENSOR WHICH IS SENSITIVE TO PRESSURE, TENSION, TORSION AND HEAT AND A PROCESS OF OPERATION

Gerhard Schiffner, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 19, 1980, Ser. No. 179,665
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1979, 2936303
Int. Cl.³ G01B 9/02
U.S. Cl. 356—349 5 Claims

1. A process of utilizing a sensor which is sensitive to influences including pressure, heat, tension and torsion, said process including: providing a sensor having means for receiving influences from pressure, heat, tension and torsion, said means comprising a ring interferometer having a light source, a pair

of detectors, and a waveguide wound in a coil with a coupling point at each end, said waveguide being capable of propagating only one mode of specific first and second polarization states with the second polarization state being of a fixed relationship to said first polarization state; said ring interferometer having (1) means for coupling light of said first polarization state from said source into each coupling point of the waveguide for propagation therein to the other coupling point for output coupling therefrom, (2) means for receiving said output coupled light from said pair of coupling points, for superimposing



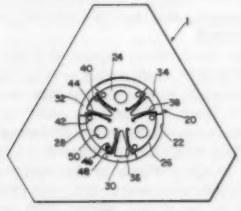
components thereof into two separate superimposed beams, and for separately directing said two separate beams at said pair of detectors, and (3) a polarizer which is transparent to only said second polarization state and which is located in the path of each separate superimposed beam adjacent a light receiving surface of the respective detector; subjecting said interferometer to one of said influences to cause a changeover of light of said first polarization state to the second polarization state to change the intensity of the light of said second polarization state; and measuring the change in the intensity of the light of the second polarization state received at said detectors.

4,436,423

RING LASER GYROSCOPE SUSPENSION

Shri A. Kumar, Parsippany; Bo H. G. Ljung, and James G. Koper, both of Wayne, all of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Sep. 14, 1981, Ser. No. 301,608
Int. Cl.³ G01C *19/64*
U.S. Cl. 356—350 **4 Claims**



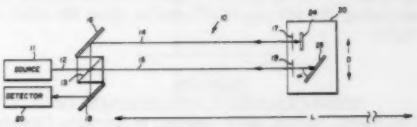
1. A ring laser gyroscope comprising:
a generally triangular body having three apexes and an axis;
a bore axially formed in the center of the body coaxially therewith;
a generally cylindrically shaped hinge located within the bore coaxially therewith, the hinge including:
a plurality of radially extending spaced wing sections for mounting the hinge;
a plurality of arcuate segments, each segment bridging two adjacent wing sections and extending radially outwardly therefrom for contact with the bore, the segments subtending predetermined arcuate areas of contact with the bore, the segments being positioned in a preselected orientation so that the centers of the contact areas are located approximately midway between the apexes of the triangular body; and
a plurality of slits longitudinally formed between the wing sections and the arcuate segments for permitting oscillating displacement of the body relative to the wing sections about the axis.

4,436,424

INTERFEROMETER USING TRANSVERSE DEVIATION OF TEST BEAM

Joachim Bunkenburg, Rochester, N.Y., assignor to GCA Corporation, Bedford, Mass.

Filed Jul. 27, 1981, Ser. No. 287,269
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—356 **13 Claims**



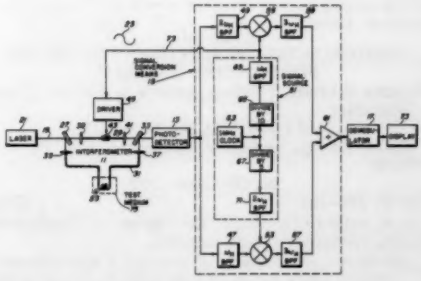
1. An interferometer using light divided into reference and test beams traveling different paths from which said beams are reflected and recombined for detecting interference fringes, the path for said test beam being arranged to change in length with deviation transverse to said test beam path, said interferometer comprising:
a. a test beam reflector formed as a reflective diffration grating;
b. said diffraction grating being inclined relative to said test beam at the autocollimation angle of said grating so said grating reflects said test beam back on itself;
c. means responsive to said deviation transverse to said test beam path for moving the region where said test beam is incident on said inclined grating; and
d. said inclination of said diffraction grating being oriented relative to said test beam so that movement of said region where said test beam is incident on said inclined grating changes the path length of said test beam.

4,436,425

SIGNAL WAVEFORM DETECTOR USING SYNTHETIC FM DEMODULATION

James H. Cole, Great Falls, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 29, 1982, Ser. No. 362,813
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—361 **7 Claims**



1. A test signal waveform detector comprising:
an interferometer for splitting into two parts a light beam from an external coherent light source, for modulating the phase

difference of the two parts by the waveform of a sinusoidal test signal and the waveform of a sinusoidal reference signal, the reference signal having a frequency $\omega\mu$ and acting as a carrier to the test signal information, and for recombining the two parts of the split beam to form an interference pattern;

a photodetector disposed at the output of the interferometer and responsive to forming of the interference pattern for producing an ac signal that is proportional to the cosine of the phase difference of the recombined two parts of the split beam;

signal conversion means connected to the photodetector for converting the ac signal produced by the photodetector to another ac signal that carries the test signal information as an equivalent frequency modulation; and

a demodulator connected to the signal conversion means for extracting the test signal information from the other ac signal.

4,436,426

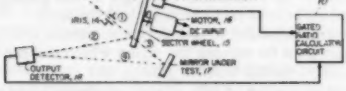
HIGH-PRECISION REFLECTOMETER

Irl W. Smith, Newton, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 866,893, Jan. 3, 1978, abandoned. This application Nov. 10, 1980, Ser. No. 205,404

Int. Cl.³ G01B *11/30*; G01J *4/00*; G01N *21/55*

U.S. Cl. 356—369 **16 Claims**



1. A reflectometer for determining the reflectivity of reflecting means comprising:

means for producing a beam of light;

first and second reflecting means;

means for producing a first signal which is a function of the difference of the reflectivities of said first and second reflecting means;

means for producing a second signal which is a function of the product of said reflectivities; and

means for producing an output signal as a function of said first and second signals, said output signal being a function of the reflectivity of at least one of said first and second reflecting means.

4,436,427

PHOTOELECTRIC MEASUREMENT OF MOVING FILAMENTARY MATERIAL

Hermann Schwartz, Pfäffikon, assignor to Siegfried Preyer, Switzerland

Filed Feb. 9, 1982, Ser. No. 347,277

Claims priority, application Switzerland, Feb. 18, 1981, 1078/81

Int. Cl.³ G01B *11/10*

U.S. Cl. 356—385 **6 Claims**

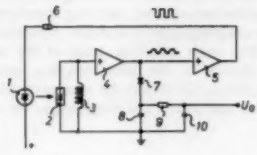
1. A method of measuring the diameter of longitudinally moving filamentary material including

providing a pulsed source of light and a photoresponsive detector facing and on opposite sides of a measuring gap,

running the filamentary material through the gap,

providing a resonant circuit coupled to the output of the photoresponsive detector for rejecting signals other than those resulting from the pulsed source of light, and

energizing the source of light with pulses from the same resonant circuit, thereby synchronizing the light pulses



from the source with the photoresponsive circuit to permit noise rejection.

4,436,428

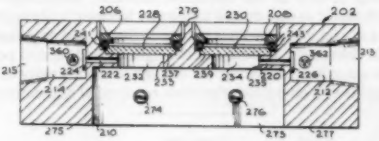
PHOTOACOUSTIC SPECTROMETER

Atsuo Watanabe, and Masahiro Uno, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Continuation-in-part of Ser. No. 55,271, Jul. 6, 1979, abandoned, and a continuation-in-part of Ser. No. 55,272, Jul. 6, 1979, abandoned, and a continuation-in-part of Ser. No. 58,207, Jul. 17, 1979, abandoned. This application Nov. 25, 1980, Ser. No. 210,407

Int. Cl.³ G01N *21/00*

U.S. Cl. 356—432 **1 Claim**



1. A photoacoustic spectometer including a mounting block and a detector block carried thereby, said mounting block having a vertically-oriented opening therethrough and a horizontal opening therein communicating with said vertical opening;

support means movably carried in said vertically oriented opening;

vertical adjustment means carried by said horizontal opening and engaging said support means for effecting vertical motion thereof;

said detector block being supported from said mounting block and have an overhanging portion, said overhanging portion including at least one opening therethrough;

said detector block including, in addition, a sample bed portion, said sample bed portion including a recess in the lower surface thereof adapted to receive said support and at least one upper recess in the upper surface thereof adapted to receive a sample dish, said upper recess being positioned to be, in use, aligned with said at least one opening in said overhanging portion of said detector block;

a window covering said upper recess;

an O-ring surrounding said window;

said sample bed portion including, in addition, a reference chamber;

a tunnel fluid-coupling said reference chamber to said upper recess;

a pair of thermo-sensitive elements supported at the reference chamber end of said tunnel and each having terminals for connection to external electrical circuits;

said reference chamber having means for connecting to an external source of a fluid;

said sample bed portion and said "O"-ring being forced into sealing engagement with said overhanging portion upon

upward movement of said support means by adjustment of said vertical adjustment means, to form a sealed chamber.

4,436,429

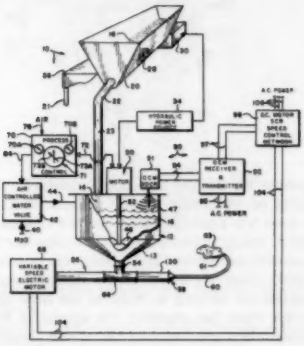
SLURRY PRODUCTION SYSTEM

William A. Strong, Rte. 11, Box 1150, Brinkley Rd., Pine Bluff, Ark. 71611, and Kenneth Church, Pine Bluff, Ark., assignors to William A. Strong, Pine Bluff, Ark.

Division of Ser. No. 262,754, May 11, 1981. This application Sep. 27, 1982, Ser. No. 424,400

Int. Cl.³ B01F *3/12*

U.S. Cl. 366—2 **11 Claims**



1. An automatic slurry production system comprising:

means for receiving a powdered or aggregate raw material material and a liquid to be mixed therewith whereby to form a slurry mixture;

agitator means for blending said slurry mixture;

hydraulic motor means for actuating said agitator means;

means for sensing hydraulic pressure variations experienced by said hydraulic motor means whereby to derive a control signal proportional to slurry viscosity;

valve means for controlling the introduction of liquid into said means for receiving a powdered or aggregate raw material, said valve means responsive to said control signal whereby liquid flow rate is generally proportional to the viscosity of said slurry mixture;

pump means for outputting slurry from said system;

means for regulating slurry output volume, said last mentioned means comprising:

sensing means for monitoring slurry head level within said means for receiving a powdered or aggregate raw material; and,

means responsive to said last mentioned sensing means for controlling the speed of said pump means whereby to control slurry output volume in response to said slurry head level.

4,436,430

DEVICE FOR THE CONTINUOUS MIXING OF A DRY FINISHED MORTAR

Karl M. Mayer, Immenhofen 55, 8951 Ruderatshofen, and Rudolf Schäfer, Blaichacher Str. 21, 8971 Burgberg, both of Fed. Rep. of Germany

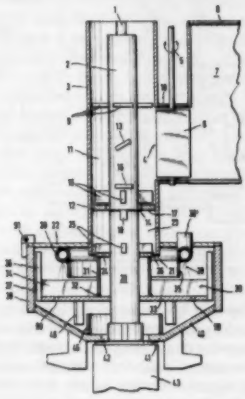
Continuation of Ser. No. 149,695, May 14, 1980, abandoned. This application May 11, 1982, Ser. No. 377,168

Claims priority, application Fed. Rep. of Germany, May 17, 1979, 2920025

Int. Cl.³ B28C *5/08, 5/16*

U.S. Cl. 366—13 **10 Claims**

1. In a device for the continuous mixing of a powdery, dry mortar with a liquid and/or foam material, wherein said device includes a cylindrical mixing chamber having a circumferential wall and an outlet connected to a suction device and an axially disposed, motor-driven mixing shaft having mixing means, the improvement comprising said mixing chamber including a disc member surrounding said shaft and rotatable therewith, said disc member extending substantially perpendicular to said shaft and having on a face thereof opposite said outlet said mixing means, said mixing means comprising a plurality of generally upstanding and radially extending beaters being secured on said face of said disc member, each said beater



having a free outer edge, said free outer edges of said beaters and outer edge of said disc member being spaced from said mixing chamber wall to define an annular gap having a width just exceeding the largest grain diameter of the dry mortar, said mixing chamber comprising further an annular liquid supply member surrounding and radially spaced apart from said mixing shaft, and said mixing chamber including furthermore baffle means for diverting the material being mixed from said suction device.

4,436,431

SLURRY PRODUCTION SYSTEM

William A. Strong, Rte. 11, Box 1150, Brinkley Rd., Pine Bluff, Ark. 71611, and Kenneth Church, Pine Bluff, Ark., assignors to William A. Strong, Pine Bluff, Ark.

Division of Ser. No. 262,754, May 11, 1981, Pat. No. 4,397,561. This application Sep. 27, 1982, Ser. No. 424,278

Int. Cl.³ B01F *15/02*

U.S. Cl. 366—17 **2 Claims**

1. Automatic slurry mixing and pumping apparatus comprising:

vat means for receiving a powdered or aggregate raw incoming material and a liquid to be mixed therewith whereby to form a slurry mixture;

agitator means dispossed within said vat means for blending said slurry mixture;

hydraulic motor means for actuating said agitator means;

pump means in fluid flow communication with said vat means for outputting slurry from said apparatus;

variable speed electric motor means for driving said pump means;

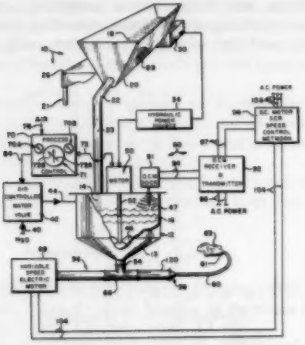
means for automatically controlling output volume, said last mentioned means comprising:

ultrasonic, open channel monitoring means for monitoring slurry head level within said vat means and for controlling said variable speed electric motor means in response thereto; and,

means responsive to said head monitoring means for controlling the speed of said pump means whereby to regulate the volume of slurry outputted from said apparatus; and,

means for continuously and automatically regulating slurry viscosity concurrently with operation of said means for controlling slurry output volume, said last mentioned means comprising:

means for sensing hydraulic pressure variations experienced by said hydraulic motor means hereby to derive a control signal proportional to slurry viscosity; and,



valve means for controlling the introduction of liquid in to said vat means, said valve means responsive to said control signal whereby liquid flow rate is generally proportional to the viscosity of said slurry mixture.

4,436,432

KNEADING MACHINE

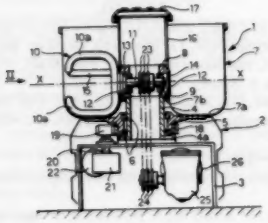
Amabile Drocco, Alba, Italy, assignor to Sancassiano S.p.A., Cuneo, Italy

Filed Nov. 13, 1981, Ser. No. 321,049

Claims priority, application Italy, Nov. 13, 1980, 68740 A/80

Int. Cl.³ A21C *1/06, 1/14;* B28C *1/16;* B29B *1/06*

U.S. Cl. 366—95 **6 Claims**



1. A kneading machine including:

a fixed support structure;

a kneading trough centrally supported by said support structure for rotation about a vertical axis, and

a rotary kneading tool located within said kneading trough, wherein the improvement comprises providing:

said kneading tool with means for rotating said tool about a substantially horizontal axis, and

said machine being further provided with fixed countermembers which comprise two arms supported in a substantially horizontal plane by a central shaft and disposed at both sides of said kneading tool, said fixed countermembers cooperating with said kneading tool to separate the dough entrained by said tool during rotation, wherein the axis of rotation of said kneading tool extends substantially radially of the vertical axis of rotation of said kneading trough.

4,436,433

BLENDING OF FLUID MATERIALS

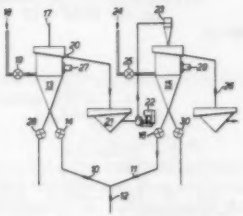
George D. Barnes, Camberley, England, assignor to Wilkinson Rubber Linatex Limited, Great Britain

Filed Feb. 3, 1982, Ser. No. 345,407

Claims priority, application United Kingdom, Feb. 9, 1981, 8103909

Int. Cl.³ G05D *11/02*

U.S. Cl. 366—152 **20 Claims**



1. Apparatus for treating a particulate material, the constituent particles of which are of non-uniform size, in order to obtain at least one product which meets a desired particulate specification, the apparatus comprising a classifier which separates the partculate material into a relatively coarse underflow fraction and a relatively fine overflow fraction, and which has control means for varying as required the flow of the underflow fraction from the classifier, the apparatus further comprises at least a first and a second one of said classifier, the said first classifier having a first control means for varying as required the flow of a first underflow fraction from the said first classifer and the second classifier having a second control means for varying as required the flow of a second underflow fraction from the said second classifier, means for blending the consequent first and second underflow fractions including means for controlling the first and second control means so as to maintain during blending a chosen blend ratio between the rate of flow of the first underflow fraction and the rate of flow of the second underflow fraction, and means for dumping such underflow fraction as is surplus to blending requirements.

15. Apparatus to control blending of supplies of at least a first and a second fluid material comprising (1) at least a first flow control valve actuable by a first valve signal for controlling a flow of said first material and a second flow control valve actuable by a second valve signal for controlling a flow of said second material, (2) ratio-setting means for securing a chosen ratio between a rate of flow of the first fluid material through the first valve and a rate of flow of the second fluid material through the second valve and thereby obtain a desired blend of material upon mixing the said flows downstream of said valves, and (3) check means for sensing periods of time when one or more of the said supplies is not adequate for obtaining the desired blend and for halting blending until the supplies are adequate.

4,436,434

PNEUMATIC TIMER

Kurt Stoll, Lenzhalde 72, D-7300 Esslingen, Fed. Rep. of Germany, and Hans-Heinrich Glättli, Seestrasse 252, CH-8700 Küsnacht, Switzerland

Filed Jul. 26, 1982, Ser. No. 401,668

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1981, 3129663

Int. Cl.³ G04B *1/26*

U.S. Cl. 368—65 **13 Claims**

1. A pneumatic timer having

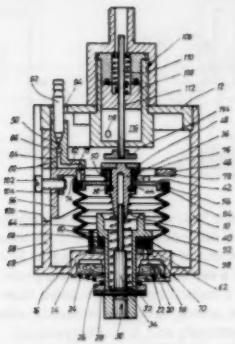
a housing,

a bellows supported by said housing and able to be changed in length along a bellows axis with a change in the amount of air within a space in the said bellows,

a spring for causing a change in length of said bellows with motion thereof along said axis,

an air valve joining said space within said bellows with the atmosphere,

a bellows driving unit for opening said valve and producing a change in the length of said bellows along said bellows axis against said spring with an exchange of air between the space inside said bellows and the atmosphere, said driving unit then moving into a starting position thereof,



an adjustable choke joining said bellows space with the atmosphere,

a sensing unit for sensing the end of a change in the length of said bellows as produced by said spring,

and a stop for limiting motion of said bellows as produced by said spring, said stop and said sensing unit being a one-piece structure, said stop being adjustably fixed to and in said housing so that it may be moved along said axis.

4,436,435

ANALOG AND DIGITAL DISPLAY TIMEPIECE

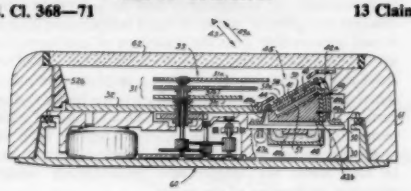
Kenichi Ushikoshi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

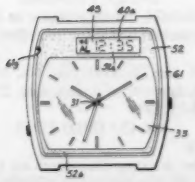
Continuation of Ser. No. 147,881, May 8, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 430,426

Claims priority, application Japan, May 8, 1979, 54-61172; Oct. 11, 1979, 54-131001

Int. Cl.³ G04B *25/00*

U.S. Cl. 368—71 **13 Claims**





1. A hybrid display watch comprising:

a watch case having an upper display surface and an interior, said display surface having at least one display opening;

a transparent cover panel within said display opening;

watch movement means including at least timekeeping circuit means and a gear train and motor for driving an analog display, and driving circuit means for driving a digital display, said movement disposed within said interior;

analog display means disposed within said interior between said movement and said transparent cover panel in registration with said display opening, said analog display means including a substantially planar analog dial covering at least a portion of said movement and at least an hour hand and a minute hand, said hands driven by said gear train and motor; and

liquid crystal digital display means within said interior between said movement means and said transparent cover panel in the space occupied by said hands, said digital display means driven by said driving circuit means in said movement means and disposed adjacent said analog display means in registration with said at least one display opening, said digital display means occupying a smaller surface area than that of said analog display and mounted to said watch movement means and disposed in a direction of 12 o'clock of said analog display, the face of the liquid crystal digital display means being inclined to the direction of six o'clock with respect to said dial so that one side of the liquid crystal digital display means is adjacent to the dial and the other side of the display means is adjacent to the under surface of the transparent cover panel and further, said digitsal display and said hands being disposed in the same region defined by the space between said cover panel and said analog dial.

4,436,436

DETECTION CIRCUIT FOR AN ELECTRONIC TIMEPIECE

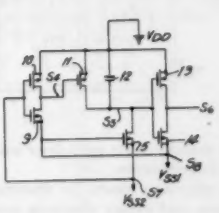
Masuo Kitano, Matsumoto, Japan, assignor to Shimanchi Seiki Kabushiki Kaisha, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

Filed Sep. 2, 1982, Ser. No. 414,208

Claims priority, application Japan, Sep. 3, 1981, 56-138909; Jun. 16, 1982, 57-103625

Int. Cl.³ G04B *1/00*; H03K *17/22*

U.S. Cl. 368—204 **8 Claims**



1. In an electronic timepiece comprising an oscillator circuit outputting a standard frequency signal, a divider network dividing down said standard frequency signal to provide timekeeping data, display means for displaying at least said timekeeping data, a battery, said battery when applied, providing power to operate said electronic timepiece, a voltage circuit for boosting the voltage out of said battery, operation of said voltage boosting circuit being subject to input thereto of a frequency signal derived from operation of said oscillator circuit, the improvement therein comprising:

a detection circuit for detecting the application of said battery in said timepiece, said detection circuit including:

a capacitor having first and second terminals;

a first switching element in parallel with said capacitor, said

first switching element when OFF being an open circuit and when ON being of low resistance;

a second switching element electrically connected at one end to said second capacitor terminal, boosted voltage terminals of said voltage circuit being electrically connected respectively to said first capacitor terminal and to the other end of said second switching element;

circuit means operating in a first mode turning said first switching element OFF and said second switching element ON when said boosted output at said voltage circuit terminals exceeds the voltage of said battery, and in a second mode turning said first switching element ON and said second switching element OFF when said output at said voltage circuit terminals is less than said battery voltage, said capacitor charging through said second switching element in said first mode, charging of said capacitor to a selected level in said first mode causing an output signal indicative of battery application and operation of said oscillator circuit.

4,436,437

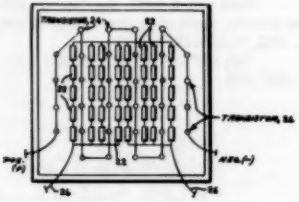
HIGH ENERGY SINGLE PULSE LASER CALORIMETER

William R. Beggs, Albuquerque, N. Mex., and Barry D. Crane, USAF Academy, Colo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 27, 1981, Ser. No. 286,818

Int. Cl.³ G01J 5/24; G01K 17/00

U.S. Cl. 374—32 **3 Claims**



1. A high energy, single pulse laser calorimeter apparatus comprising in combination:

an energy absorbing means for absorbing the energy in a laser beam, said energy absorbing means converting the energy in said laser beam to a heat signal,

an energy equilibrating means to receive and absorb said heat signal,

a bonding means to bond said energy absorbing means and said energy equilibrating means together, said bonding means being thermally conductive, and,

a heat sensing means to receive said heat signal from said energy equilibrating means, said heat sensing means detecting and converting said heat signal to a voltage signal, said heat sensing means comprising a plurality of transistors of which the base and emitter leads between respective adjacent transistors are connected together to form a series circuit of diode junctions, and a constant current source to forward bias said series circuit of diode junctions to provide a voltage drop thereacross.

4,436,438

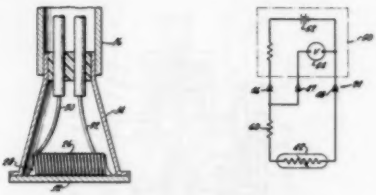
MULTIPLE PROBE TEMPERATURE MEASURING SYSTEM AND PROBES THEREFOR

Henry P. Voznick, Arcadia, Calif., assignor to Wahl Instruments, Inc., Culver City, Calif.

Filed Jul. 21, 1981, Ser. No. 285,531

Int. Cl.³ G01K 7/20

U.S. Cl. 374—165 **8 Claims**



1. A resistance heat measuring system comprising

a plurality of independent, individually separate and mutually unconnected probes including at least an immersion probe and a surface probe, each said probe having a probe body and a resistive sensor mounted therein, said immersion probe sensor having a nominal resistance at a reference temperature and a nontemperature varying resistor connected in series therewith,

a first detachable electrical connector attached to said immersion probe body and electrically connected to the immersion probe sensor,

a second detachable electrical connector attached to said surface probe body and electrically connected to the surface probe sensor,

a meter for indicating temperature in accordance with measured resistance of a probe sensor, said meter being calibrated to the resistance temperature curve of a resistive sensor having said nominal resistance at said reference temperature,

means including said connectors for alternatively and detachably connecting one or the other of said probes to said meter,

said surface probe sensor having a resistance at said reference temperature that is substantially the same as the sum of the resistance of said immersion probe sensor, and said nontemperature varying resistor at said reference temperature whereby the resistance of said surface probe sensor changes at a greater rate with equal temperature changes in said sensors than does the resistance of said immersion probe sensor to thereby decrease errors due to loss of heat from said surface probe body to ambient atmosphere when said surface probe is connected to the meter and said surface probe body is in contact with a surface of which temperature is to be measured, and whereby each said probe may be interchangeably and individually connected to said meter for temperature measurement without changing calibration of the meter.

4,436,439

SMALL PRINTER

Haruhiko Koto, Shiojiri, Japan, assignor to Epson Corporation, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

Filed Aug. 26, 1981, Ser. No. 296,610

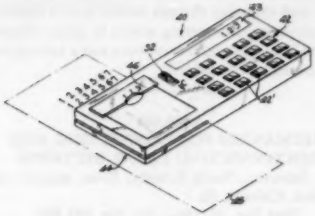
Claims priority, application Japan, Aug. 27, 1980, 55-117890; Aug. 27, 1980, 55-117891

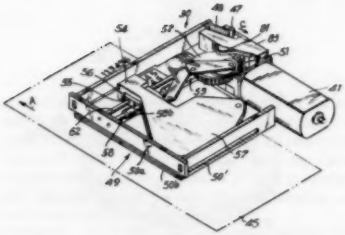
Int. Cl.³ G01D 15/18

U.S. Cl. 400—126 **66 Claims**

1. A printer for printing characters on a printing medium comprising a frame, carriage means slidably mounted on said frame for reciprocal lateral displacement across said printing medium, a first end of said carriage means being slidably

mounted on said frame, said carriage means including a second end pivotally coupled to said frame, printing means carried on said carriage means for selectively printing characters at predetermined positions along lines of said printing medium, motor means for providing a rotary motion, coupling means coupling said motor means to said carriage means for selectively converting the rotary motion of said motor means into non-uniform reciprocation of said carriage means so that said printing means reciprocates through said predetermined positions, said coupling means being a crank means including a





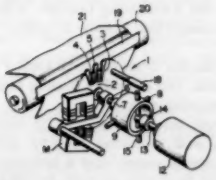
crank gear means rotatably mounted on said frame and engaged with said motor means for rotation thereby and a transmission lever means coupled intermediate said crank gear means and said carriage means for converting the rotation of said crank gear means into reciprocation of said carriage means, and printing position control circuit means for determining when said printing means is in each said predetermined position and for selectively supplying a printing signal to said printing means so that said printing means will print a character at said selected predetermined positions.

4,436,440

SHIFTABLE DAISY WHEEL PRINTER

Nobuo Iwata, Kanagawa, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Oct. 27, 1981, Ser. No. 315,443
Claims priority, application Japan, Nov. 10, 1980, 55-157833
Int. Cl.³ B41J *1/24*
U.S. Cl. 400—144.2 **17 Claims**



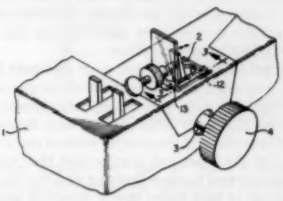
1. A printer including a type wheel carrying a multiplicity of fingers carrying type in a plurality of tiers and centrally provided with a rotary shaft, means for achieving a printing operation by imparting to the type wheel a motion to select one of the plurality of tiers and a rotary motion to select one of the muliplicity of fingers; characterized in that said means includes a rotatable drive shaft for transmitting torque to said rotary shaft of the type wheel through a joint comprising a pair of pins substantially orthogonal to each other and a coupling member having portions slidably receiving each of said pins, said portions being spaced radially outwards from each of said shafts.

4,436,441

TYPEWRITER ACCESSORY DEVICE FOR BOLD FACE TYPING

George R. Robert, 11 Hackfeld Rd., Worcester, Mass. 01609

Filed Jul. 6, 1982, Ser. No. 395,680
Int. Cl.³ B41J *7/18*
U.S. Cl. 400—304 **3 Claims**



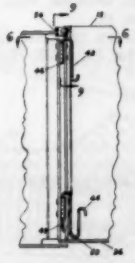
1. A device for creating bold type for use with a typewriter having a half-space lever, the device comprising: (a) a frame adapted to be positioned adjacent the half-space lever said frame having: (i) a base with securing lugs affixed to said base, and (ii) a support member integral with said base, (b) first means adjustably mounted on said support member for contacting said lever, (c) and second means for securing said first means into a pre-selected position with respect to said support member.

4,436,442

DIRECTORY HOLDER

Renold A. Miskin, 1722 Roberta St., Salt Lake City, Utah 84115

Continuation of Ser. No. 159,960, Jun. 16, 1980, abandoned, which is a continuation of Ser. No. 892,997, Apr. 3, 1978, abandoned. This application Sep. 29, 1982, Ser. No. 427,885
Int. Cl.³ B42F *13/00*
U.S. Cl. 402—73 **10 Claims**



1. A directory holding device for containing, preserving and securing a directory such as a telephone directory, said directory holding device comprising:

(a) bed means adapted to receive a directory;

(b) cover means;

(c) hinge means adapted for hingedly attaching said cover means, along one side thereof, to a mutually respective

side of said bed means, so that the cover means can be moved from a closed position in which it substantially overlies said bed means to an open position in which it lies substantially adjacent to said bed means, whereby said cover means is adapted to cover the directory when said cover means is in the closed position overlying said bed means and to receive any portion of the directory when said cover means is in the open position lying adjacent to said bed means;

(d) flange support means at the respective bottom ends of said bed means and said cover means for supporting the pages of a directory when any portion of said directory is received in said bed means and said cover means;

(e) positioning pin means comprising a generally inverted U-shaped member having a front portion and a straight back portion which is bent back over said front portion, with said straight back portion being adapted to serve as a hinge pin in said hinge means, whereby said positioning pin means may pivot about the hinge line of said hinge means, and with said front portion of said positioning pin means being adapted to extend downwardly between pages of the directory to maintain the top side of the directory in a proper position;

(f) cradle pin means comprising an elongate pin member having a straight central portion with opposite end portions which are bent back in opposite directions over the central portion so as to form a top loop defined by one of the end portions and the central portion and a bottom loop defined by the other end portion and the central portion, with the one end portion forming said top loop serving as a hinge pin in said hinge means whereby said cradle pin means is adapted to pivot about the hinge line of said hinge means, and whereby the other end portion forming said bottom loop being adapted to extend upwardly between pages of the directory such that the directory is supported by said bottom loop; and

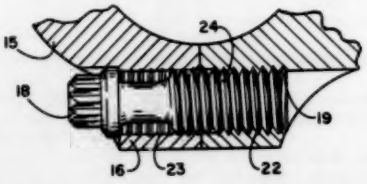
(g) security means adapted to prevent easy removal of said positioning pin means from said hinge means and subsequently easy removal of a directory from said directory holding device, said security means comprising an elongate tab means mounted for movement from a first position to a second position, wherein in said first position a portion of said tab means extends over said positioning pin means blocking the removal of said positioning pin means from said hinge means, and wherein in said second positon, the tab means clears said positioning pin means so that said positioning pin means can be removed from said hinge means.

4,436,443

CONNECTING ROD

Daniel F. McCormick, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Nov. 15, 1982, Ser. No. 441,343
Int. Cl.³ F16B *19/02*
U.S. Cl. 403—14 **10 Claims**



1. A connecting rod assembly for connecting a piston to a crankshaft, said assembly comprising:

(A) a connecting rod having a first threaded bore, said first bore including female threads;

(B) a connecting rod having a second threaded bore aligned with said first threaded bore, said second bore including female screw threads, said rod and cap joining together to form a circular bearing surface; and

(C) a bolt having male screw threads, a first segment of said male threads engaging the female threads of said first threaded bore and a second segment of said male threads engaging the female threads of said second threaded bore, one of said threaded bores or one of said segments of male threads having truncated threads to reduce the length of engagement of the corresponding threads with said truncated threads and to act with the corresponding threads to distort said engaging threads as said bolt is tightened;

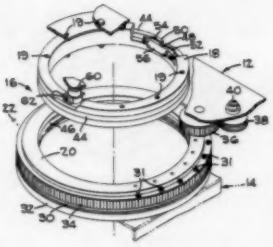
thereby providing a centering action to assure alignment of said first bore and said second bore and a locking action to resist loosening of said bolt.

4,436,444

MECHANISM FOR CONNECTING AND DISCONNECTING CRANE SECTIONS

Edward P. Scherrer, North Liberty, Iowa, assignor to FMC Corporation, Chicago, Ill.

Filed Jan. 25, 1982, Ser. No. 342,298
Int. Cl.³ F16D *1/00*; F16G *11/00*
U.S. Cl. 403—24 **14 Claims**



1. In a crane having a split locking ring for assembling and disassembling the crane upper respectively to and from the crane lower, a first hydraulic ram connected between the free ends of the ring to exert substantially circumferencial forces to expand and contract the ring; the improvement comprising:

a second hydraulic ram arranged to exert a substantially radial force on said ring when assembling said crane.

4,436,445

STUD ANCHOR FOR SECURING A HOLLOW NON-ROUND EXTENSION BASE

Arthur R. Templeman, Overland Park, Kans., assignor to Peterson Manufacturing Co., Grandview, Mo.

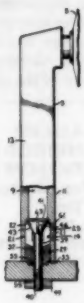
Filed Nov. 3, 1981, Ser. No. 317,888
Int. Cl.³ F16B *7/08*; F16L *41/00*
U.S. Cl. 403—189 **8 Claims**

1. A stud anchor in an operational combination with a hollow extension and a mounting bracket, wherein said stud anchor firmly connects said hollow extension to said mounting bracket;

(a) said stud anchor comprising an anchor member having a base, a shank, and a head; a biasing member; and anchor member securing means;

(1) said base being on an end of said anchor member abutting said mounting bracket; said base having a locking means comprising a non-round lug depending from said base and adapted to snugly mate with an aperture in said mounting bracket, thereby preventing free rotation of said anchor member relative to said mounting bracket and ensuring proper orientation of said stud anchor relative to said mounting bracket;

(2) said shank being an extension between said base and said head of said anchor member;
(3) said head including a plurality of resiliently deformable segments flexibly attached to said shank, said segments each having an outer wall surface;
(4) said biasing member having selective activation means adapted for selective biasing of said segments outwardly from an axis of said anchor member and into frictional engagement with said hollow extension;
(5) said anchor member securing means adapted for selective, secure attachment of said anchor member to said mounting bracket;



(b) said hollow extension having inner wall surfaces snugly enclosing said stud anchor; said stud anchor is operably positioned in the extension and with an end of said hollow extension being of configuration requiring fixed and predetermined orientation relative to said mounting bracket; said non-round lug on said anchor member controlling and fixing said orientation;
(c) whereby when said segments are selectively biased outwardly by said biasing member into frictional engagement with said hollow extension inner wall surfaces, said stud anchor securely retains said extension onto said mounting bracket.

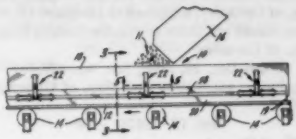
4,436,446

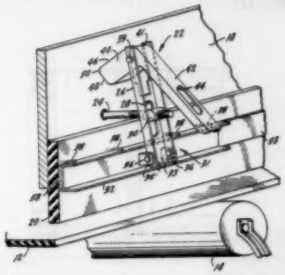
ADJUSTABLE, QUICK-RELEASE BARRIER CLAMP

James R. Gordon, 301 W. Boling, Benton, Ill. 62812

Filed Sep. 21, 1981, Ser. No. 303,833
Int. Cl.³ B25G 3/36; E04G 7/00
U.S. Cl. 403—384 **10 Claims**

1. An adjustable quick-release clamp which clamps a barrier member to a base, comprising:
a clamp support member affixed to and projecting outwardly from the base;
an elongated main lever having a central aperture through which the clamp support member projects;
a retainer member, mounted on the clamp support member outwardly of the main lever in position to retain the main lever on the clamp support member and acting as a fulcrum for the main lever, the retainer member being adjustably mounted on the support member for movement toward and away from the base adjusting the fulcrum for the main lever to accommodate barrier members of varying thickness, and permitting adjustment of the clamping pressure;
gripper means mounted on a first end of the main lever, on the side of the main lever facing the base, adapted to engage a barrier member;
an overcenter toggle cam, pivotally mounted on the second end of the main lever for movement between a release position, affording minimal spacing between the base and the second end of the main lever, and a range of clamp positions in which the cam holds the second end of the main lever at a substantial displacement from the base, movement of the cam to a clamp position causing the main lever to engage the retainer member and pivot about the retainer member as a fulcrum, moving the first end of the





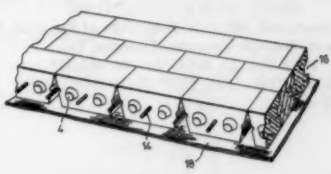
main lever toward the base so that the gripper means securely clamps the barrier member to the base;
and a handle lever, attached to the cam, for manually pivoting the cam between its release and clamp positions.

4,436,447

EROSION CONTROL BLOCKS

Robert E. Crowe, Milton, Canada, assignor to Terrafix Erosion Control Products, Inc., Islington, Canada

Filed Jul. 14, 1981, Ser. No. 283,271
Claims priority, application Canada, Sep. 17, 1980, 360539
Int. Cl.³ E02B 3/14
U.S. Cl. 405—16 **8 Claims**



1. A concrete erosion control block having a pair of parallel opposed oblong rectangular outer surfaces, a pair of parallel opposed side surfaces extending lengthwise of said outer surfaces, a pair of longitudinally spaced frustoconical spigots formed on one of said parallel side surfaces and at least one longitudinally elongated slot in the opposite side surface, the spigots and the at least one slot being located to interengage respectively with slots and spigots of similar quincuncially related blocks when the blocks are layed in bond in adjacent parallel courses with their outer surfaces substantially in common planes, whereby to permit relative movement of said courses in a direction parallel to said side surfaces and relative angular movement between adjacent blocks in both the same and adjacent courses, whilst restraining movement of individual blocks out of said common planes.

4,436,448
EXCAVATING MACHINE FOR TUNNELS AND GALLERIES

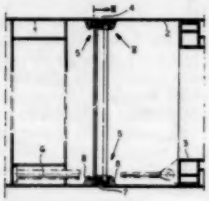
Wolf Magnus, Tangstedt-Wilstedt; Otto Braach, Heiligenhaus; Dirk Fischer, Burgwedel, and Werner Wippig, Lehrte, all of Fed. Rep. of Germany, assignors to Hochtief AG, vorm. Gebr. Helfmann, Essen and Bade & Theelen GmbH, Lehrte, both of, Fed. Rep. of Germany

Filed Dec. 29, 1980, Ser. No. 220,462

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1979, 2952744

Int. Cl.³ E02D *9/06*

U.S. Cl. 405—143 **2 Claims**



1. In a machine for excavating tunnels and galleries and comprising a shield advanced along an excavated stretch by hydraulic means braced against a pressure ring, the improvement wherein said shield comprises in combination:

at least two annular shell sections separated axially from one another and defining a separation gap;

a seal bridging said gap;

a plurality of peripherally spaced piston-and-cylinder arrangements bridging said gap and braced at opposite ends against said shell sections, each of said piston-and-cylinder arrangements being a double-acting hydraulic cylinder; and

means forming at least one closed passive hydraulic network and connected to said piston-and-cylinder arrangements to connect said double-acting cylinders in parallel for enabling variation in the effective lengths thereof to permit angular offsetting of axes of said shell sections.

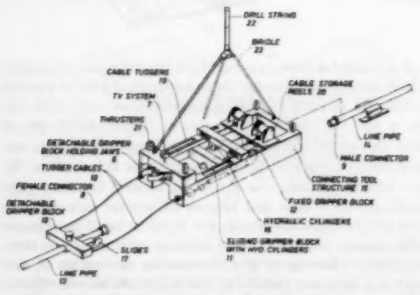
4,436,449
DRILL SHIP PIPE CAPTURE

Arren F. Smoot, and Sijtze De Jong, both of San Jose, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 22, 1982, Ser. No. 452,245

Int. Cl.³ F16L *1/00;* **B23P** *19/04;* **B63C** *11/00*

U.S. Cl. 405—170 **12 Claims**



1. A method for aligning a pipe string with a previously installed pipe segment comprising:

positioning an end of the pipe string within a predetermined range of an end of the pipe segment;

attaching a first gripper block to the end of the pipe string;

moving an alignment tool over to the pipe segment while paying out connecting means between the alignment tool and the first gripper block;

attaching a second gripper block of the alignment tool to the end of the pipe segment;

tensioning the connecting means to draw the end of the pipe segment and the end of the pipe string within close proximity of each other;

attaching a third gripper block of the alignment tool to the end of the pipe string, the second gripper block and the third gripper block being in a spaced-apart position; and

drawing the second gripper block and the third gripper block toward each other, thereby aligning the end of the pipe string with the end of the pipe segment.

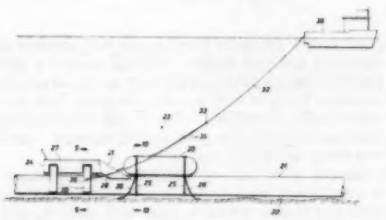
4,436,450
APPARATUS AND METHOD FOR REMOVING BUOYANCY MODULES FROM SUBMERGED PIPE

Don C. Reed, Humble, Tex., assignor to Exxon Production Research Co., Houston, Tex.

Filed Aug. 21, 1981, Ser. No. 294,968

Int. Cl.³ F16L *1/04;* **B63B** *21/52*

U.S. Cl. 405—171 **11 Claims**



1. Apparatus for releasably attaching a buoyant module to a submerged pipeline. comprising:

a first strap wrapped over the top of the module;

a second strap wrapped around the underside of the pipeline;

a first link connected between one pair of opposing ends of said first and second straps, said first link being breakable upon application thereto of a preselected tension greater than that exerted thereon by the positive buoyant force of the module;

a second link releasably connected between the other pair of opposing ends of said first and second straps; and

means for releasing said second link from between said first and second straps in response to the first link being broken.

4,436,451
SELF-STANDING MARINE RISER

Harold E. Anderson, 26 Dover St., London, England W1X 3PA

Filed May 18, 1981, Ser. No. 264,867

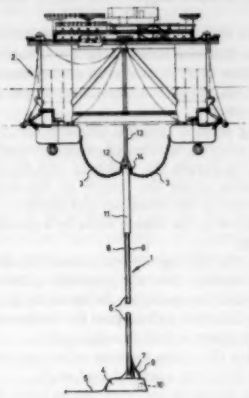
Claims priority, application United Kingdom, Feb. 20, 1980, 8005655

Int. Cl.³ E21B *7/12*

U.S. Cl. 405—195 **14 Claims**

1. A self-standing marine riser which comprises a base, a riser column, a flexible joint between the base and the riser column, and a plurality of catenary chains attached to the top of the riser column for providing a loose coupling between the top of the riser column and a surface structure including a vessel, rig, platform and the like on the surface above the location of the riser, said chains providing a direct connection between said riser column and said surface structure, said riser

column comprising a lower relatively slender column section and an upper column section which includes at least one variable buoyancy chamber, said riser supporting at least one conduit for the conveyance of a fluid.

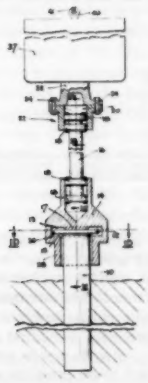


4,436,452

SONIC PILE DRIVER SYSTEM EMPLOYING RESONANT DRIVE MEMBER AND PHASED COUPLING

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Filed Jul. 12, 1982, Ser. No. 397,563
Int. Cl.³ E02D 7/18
U.S. Cl. 405—232 15 Claims



1. A sonic system for driving an elongated member into earthen material comprising

means for generating sonic energy,

an elongated compliant resonator member,

means for coupling sonic energy from said generating means to said compliant resonator member, the frequency of said sonic energy being such as to cause resonant longitudinal standing wave vibration of said resonator member,

coupler member means for coupling sonic energy from the resonator member to the elongated member and,

means for adjusting the coupling of sonic energy to the elongated member to a preselected fractional portion of the total vibrational cycle of said resonant member,

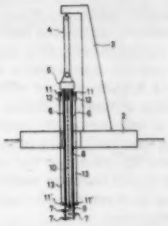
said elongated member being driven non-resonantly along the longitudinal axis thereof during said predetermined fractional portion of the vibrational cycle.

4,436,453

MACHINE FOR AND METHOD OF HARDENING SOFT GROUND IN DEPTHS

Mitsuo Miura; Yoshinori Kukino, and Takumi Fujii, all of Tokyo, Japan, assignors to Takenaka Komuten Co., Ltd. and Takenaka Doboku Co., Ltd., both of, Japan

Filed Mar. 8, 1982, Ser. No. 355,648
Int. Cl.³ E02D 3/12
U.S. Cl. 405—263 5 Claims



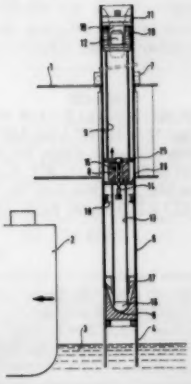
1. A machine for hardening the soft ground in depths, having elongated agitation shafts provided with agitation vanes at lower portions thereof and fastened rotatably to an elongated support cylinder, a rotary driving means to which the upper ends of said agitation shafts are connected, and a hardener supply unit adapted to discharge a hardener in the vicinity of said agitation vanes, comprising suitable pairs of brackets provided on the outer circumferential surfaces of upper and lower end portions of said support cylinder so as to project outward therefrom, and connecting means for joining together via jacks said pairs of brackets each pair of which are vertically opposed to each other, said jacks being adapted to be expanded and contracted so as to correct the direction in which a lower end portion of said machine is inserted into the soft ground.

4,436,454

DEVICE FOR POSITIONING AN OFF-SHORE PLATFORM ON ITS SUPPORT STRUCTURE

Jean-Louis Ninet, and Robert Vaillant, both of Nantes, France, assignors to Ateliers et Chantiers de Bretagne-ABC, Nantes, France

Filed Aug. 24, 1981, Ser. No. 295,456
Claims priority, application France, Dec. 23, 1980, 80 27347
Int. Cl.³ E02D 21/00
U.S. Cl. 405—204 9 Claims



1. A device for positioning an off-shore platform on a previ-

ously-installed support structure, said support structure including vertically upstanding legs, said platform having support piles designed to axially align with and to rest on the legs of the support structure, said platform further comprising means for moving said piles vertically to move said piles downwardly towards said legs and for locking said piles at an axially displaced position with respect to said platform, said legs including upwardly open centering cones, each pile being constituted by a hollow tube, a rod slidably positioned coaxially within said tube, said rod terminating at its lower end in a centering pin for reception within said centering cone of said leg, a resilient, compressible shock-absorbing component fixed to said rod and operatively interposed between said rod and said hollow tube, and means for effecting controlled sliding of said rod bearing said resilient, compressible shock-absorbing component within said hollow tube to effect precompression of said shock-absorbing component during transport of said platform to the situs of said previously installed support structure and for facilitating final positioning of said pile against said leg without impact and for taking up the load of the platform as transmitted to the leg to facilitate welding of said pile to said leg at the interface between the pile hollow tube and said leg about said centering cone.

9. A process for positioning of an off-shore platform on a previously installed support structure, said support structure including vertically raised legs, said platform having support piles corresponding to said legs and intended to rest on said legs of said support structure, and means for mounting said piles on said platform for vertical movement to said platform and for selective locking of said piles in position on said platform, and wherein each pile is constituted by a tube bearing a slidable rod abutting a shock-absorbing component and having means for controlled sliding of the rod in said pile, and wherein the lower part of the rod contains a centering pin extending beneath the lower end of the pile for reception within a support cone borne by said leg, said process comprising, during transport of said platform:

partially compressing said shock-absorbing component by the weight of the platform and by operation of said means for effecting controlled sliding of said rod within said pile,

partially releasing the precompression of said shock-absorbing component when the piles are aligned with said legs,

driving said piles vertically downwardly relative to said platform to engage the centering pin of said hollow rod with the support cone of said leg, while completely compressing said shock-absorbing component,

effecting controlled sliding of said rod to partially release the compressed shock-absorbing component and to remove the clearance between the pile and said leg,

welding said pile to said leg,

cutting said pile subsequent to platform installing, and

removing and hoisting said hollow rod and said shock-absorbing component from the interior of said pile for subsequent re-use without affecting the positioned off-shore platform relative to the support structure.

4,436,455

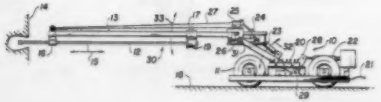
UNIVERSALLY POSITIONABLE LOW PROFILE MINE DRILLING MACHINE AND METHOD

Ershell C. Vance, Box 86, Jewell Ridge, Va. 24622

Continuation-in-part of Ser. No. 142,871, Apr. 23, 1980. This application Mar. 15, 1982, Ser. No. 358,239

Int. Cl.[3] **E21D** *11/00*; **E21B** *7/00*

U.S. Cl. 405—303 **4 Claims**



1. The method of bracing the walls of a mine tunnel having a floor and walls defining a tunnel cross section of a predetermined height and width, by mounting support members in holes drilled at an acute angle to the tunnel walls, comprising the steps of,

(a) entering a steerable low profile mine drilling rig with a height less than the tunnel height and supported by two sets of rubber tired wheels with a wheelbase shorter than the tunnel width into the tunnel and supporting the rig on its rubber tires,

(b) extending from a position between the wheels of one wheel set a boom member of predetermined length to fit with said rig across the width of said tunnel carrying a drill movable along the length of the boom generally perpendicular to the wheel set and positionable at various angles relative to the tunnel walls by a mechanism carried by said rig,

(c) orienting the drilling rib transversely in the tunnel with the boom member directed generally across the width of the tunnel and manipulating the boom by means on the rig providing direction and support for the boom in a selected position to direct a drill into the walls,

(d) positioning the boom member with one end disposed to direct the drill into a wall at said angle,

(e) anchoring the other end of the boom from the drill on the floor of the tunnel to counteract drilling force, and

(f) drilling the holes at said angle into the walls for mounting the support members with the boom member anchored to the floor.

4,436,456

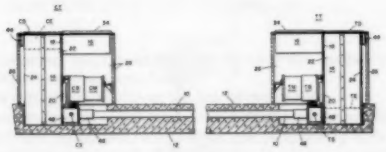
PNEUMATIC COMMUNICATION SYSTEM FOR BANKING AND THE LIKE

William D. Thomas, Marion, Iowa, assignor to Kidde, Inc., Clifton, N.J.

Filed Sep. 28, 1981, Ser. No. 306,289

Int. Cl.[3] **B65G** *51/08, 51/26*

U.S. Cl. 406—19 **9 Claims**



1. In a pneumatic communication system having a pair of spaced apart first and second carrier terminals, each of the terminals defining an upright enclosure having upper and lower ends; a carrier transit tube interconnecting and opening into each terminal adjacent its lower end; first and second carrier elevators respectively in the first and second terminals and movable therein between upper positions adjacent the terminal upper ends and lower positions adjacent the terminal lower ends; a carrier for containing items to be transported back and forth between the terminals through the transit tube, each carrier elevator and the carrier having corresponding leading and trailing transverse ends with respect to each terminal and the respective directions of travel of the carrier through the transit tube, the carrier being receivable on each carrier elevator from the transit tube through an opening in the leading end of the carrier elevator when in its lower position and movable through the transit tube by pneumatic pressure upon the carrier trailing end, each carrier elevator with the carrier thereon being gravitationally descendable from its upper to its lower position and elevatable from its lower to its upper position by pneumatic pressure; first and second selectively operable releasable means respectively retaining the first and second elevators with the carrier thereon in their upper positions and releasable to allow the same to descend to their lower positions; and first and second selectively operable pneu-

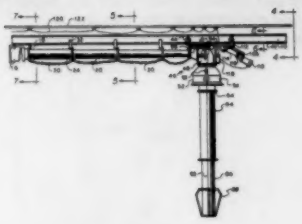
matic pressure producing means communicating with the atmosphere and respectively associated with the first and second terminals, the system being characterized by: the first releasable means operating to allow the first carrier elevator with the carrier thereon to descend to its lower position; the first pressure producing means only thereupon operating to pneumatically communicate with the trailing end of the carrier when on the first carrier elevator at its lower position and thence with the transit tube through the first carrier elevator and said opening therein effective to propel the carrier from the first elevator and through the transit tube onto the second carrier elevator through said opening therein when the second carrier elevator is at its lower position; the second pressure producing means then also operating to pneumatically communicate with the second carrier elevator effective to elevate the same and the carrier thereon in the second terminal so that the operating first pressure producing means thereupon also pneumatically communicating with the second carrier elevator via the transit tube and together with the operating second pressure producing means elevates the second carrier elevator and the carrier thereon to its upper position, the second releasable means thereupon operating to retain the second carrier elevator and the carrier thereon in its upper position; the second releasable means operating to allow the second carrier elevator with the carrier thereon to descend to its lower position; the second pressure producing means only thereupon operating to pneumatically communicate with the trailing end of the carrier when on the second carrier elevator at its lower position and thence with the transit tube through the second carrier elevator and said opening therein effective to propel the carrier from the second elevator and through the transit tube onto the first carrier elevator through said opening therein when the first carrier elevator is at its lower position; the first pressure producing means then also operating to pneumatically communicate with the first carrier elevator effective to elevate the same and the carrier thereon in the first terminal so that the operating second pressure producing means thereupon also pneumatically communicates with the first carrier elevator via the transit tube and together with the operating first pressure producing means elevates the first carrier elevator and the carrier thereon to its upper position, the first releasable means thereupon operating to retain the first carrier elevator and the carrier thereon in its upper position; first and second vent means respectively associated with the first and second terminals and operable to vent the system ahead of the carrier to the atmosphere, each of the vent means having successive first, second and third stages of operation, the first stage of the second vent means operating while the first carrier elevator with the carrier thereon descends from its upper to its lower position upon release of the first releasable means, the second stage of the second vent means operating while the carrier is moving through the transit tube from the first to the second terminal, the third stage of the second vent means operating while the second carrier elevator with the carrier thereon is being elevated to its upper position, the first state of the first vent means operating while the second carrier elevator with the carrier thereon descends from its upper to its lower position upon release of the second releasable means, the second stage of the first vent means operating while the carrier is moving through the transit tube from the second to the first terminal, the third stage of the first vent means operating while the first carrier elevator with the carrier thereon is being elevated to its upper position, the second stages of operation of the first and second vent means being effective to control the speed of the carrier through the transit tube; and means controlling operation of the first and second pressure producing means, the first and second vent means, and the first and second releasable means, all as aforesaid.

4,436,457

SUCTION PIPE

James T. Willingham, Lubbock, Tex., assignor to South Plains Sheet Metal, Inc., Lubbock, Tex.

Filed Nov. 17, 1981, Ser. No. 322,391
Int. Cl.³ B65G *53/52*
U.S. Cl. 406—116 **2 Claims**



1. An improved suction head comprising:
a. a top support box with
b. an upper flange adapted to be connected to a section of pipe,
c. said top support box having opposing, flat, parallel sides,
d. two co-axial support stub axles, one of the axles attached to each flat side,
e. said top support box having opposing, cylindrical sides co-axial with said stub axles,
f. a bottom hang box with
g. a lower flange adapted to be attached to a pick-up pipe,
h. said bottom hang box having opposing, flat, parallel sides,
i. two co-axial hang stub axles, one of the hang axles attached to each flat side of the hang box,
j. said bottom hang box having opposing, cylindrical sides co-axial with said hang axles,
k. a rectangular frame having
(i) two opposing, parallel sides designated as support sides, and
(ii) two opposing, parallel sides designated as hang sides,
l. said support sides of the frame journaled to said support axles,
m. said hang sides of the frame journaled to said hang axles,
n. a support seal flap attached to each of the support sides of the frame,
o. each of the support flaps rubbing against one of the flat sides of the support box on the outside of the frame and against one of the cylindrical sides of the hang box on the inside of the frame, and
p. a hang seal flap attached to each of the hang sides of the frame,
q. each of the hang flaps rubbing against a flat side of the hang box on the inside of the frame and against the cylindrical side of the support box on the outside of the frame.

4,436,458

LIQUID-SOLID CONTACTING APPARATUS

Lawrence W. Wisdom, Dallas, and Gordon R. Wilson, DeSoto, both of Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

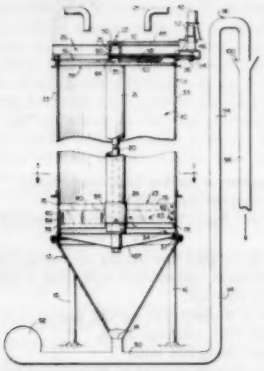
Continuation of Ser. No. 972,404, Dec. 22, 1978, abandoned.
This application Dec. 22, 1982, Ser. No. 452,329
Int. Cl.³ B65G *53/40*
U.S. Cl. 406—135 **16 Claims**

13. Apparatus suitable for providing movement of a bed of solid particles substantially uniformly therethrough in a downwardly direction in contact with liquid comprising:
(a) a generally vertically-disposed vessel for containing a compact bed of solid particles for contact with liquid;
(b) a rotatable, generally horizontally-disposed lower disc means extending substantially throughout the cross-sectional area of a lower portion of the bed for supporting the bed, said lower disc means having at least one radially

extending, slot-like opening for passing solids therethrough from the bed, said opening having a substantially uniform slot width throughout substantially the entire radius of the cross-sectional bed area;

(c) scoop means fastened on said lower disc means and extending upwardly and over the entire radial length of said slot-like opening for deflecting a substantially uniform thickness of the solid particle bed downward through said opening in said lower disc means during one revolution of said lower disc means;

(d) means for rotating said lower disc means;



(e) vertically oriented, plate-like baffle means fixedly mounted over said lower disc means and extending horizontally just above said lower disc means substantially the entire radial dimension of the bed for preventing rotation of the bed while permitting uniform downward movement of the bed; and

(f) outlet means for discharging solid particles from the lower portion of said vessel below said lower disc means while maintaining liquid in said vessel at a substantial height above said lower disc means;

said baffle means further including an extendable portion which is adjustably secured so that said extendable portion is adjustable toward and away from the lower disc means.

4,436,459

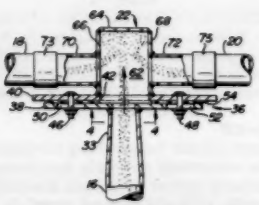
PNEUMATIC STREAM DIVIDER

Lawrence G. Caldwell, Devon, Pa., assignor to The Ducon Company, Inc., Mineola, N.Y.

Continuation-in-part of Ser. No. 837,066, Sep. 28, 1977, abandoned. This application Apr. 23, 1979, Ser. No. 32,209

Int. Cl.³ B65G *53/56, 53/66*

U.S. Cl. 406—181 **10 Claims**



1. A system for dividing a dilute phase particulate laden pneumatic stream into branch streams having a predetermined amount of particulate comprising a primary conduit for conveying a particulate laden pneumatic stream to be divided, a dead pocket spaced from and aligned with the terminal end portion of said conduit, said pocket being closed at one end, second and third branch conduits communicating with said dead pocket at a location adjacent the terminal end of said first conduit and spaced from the closed end of said pocket, and means for adjusting the relative position of the longitudinal axis of said primary conduit with respect to the center of the closed end of said pocket to facilitate division of particulate in accordance with a desired ratio, said means facilitating shifting the primary conduit relative to the center of said pocket in a direction perpendicular to the center line of said primary conduit.

4,436,460

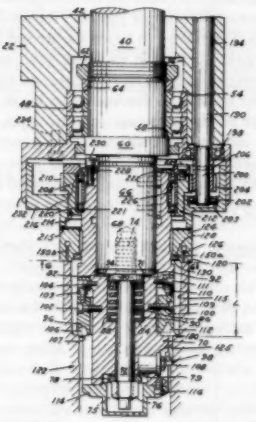
AUTOMATIC DEPTH COMPENSATING SYSTEM

Thomas A. Powell, Rockford, Ill., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Jun. 11, 1981, Ser. No. 272,450

Int. Cl.³ B23B *41/12*

U.S. Cl. 408—14 **4 Claims**



1. A spindle head bore depth compensating assembly for controlling a predetermined bore depth dimension between an outer reference surface on a workpiece having a bore with an interior bore surface to be finish machined, the combination of: a spindle head slide (14) having a positive machine stop (93); a spindle head (22) carried by said slide including stop means (124) engageable with the outer reference surface; a spindle shaft (40) having a driven end (28) and frontal portion (71); bearing means (46, 48) at opposite ends of said spindle shaft for supporting said spindle shaft for axial movement and rotation relative to said spindle head; a tool holder body (70) having an outer circumference and one end insertable into the workpiece bore; connector means (72, 76) for connecting said tool holder body to said frontal portion; a spring cavity (90) in said tool holder body arranged concentrically of said connector means; mechanical spring means (84) in said cavity to spring load said tool holder whereby engagement pressure of said stop means (124) on the workpiece during a spindle head feed stroke is limited to the spring rate of said mechanical springs means as the spindle slide engages said positive machine stop; tool means (112) supported on the outer circumference of said tool holder for finish machining the interior bore surface; means (109) (110) for pre-setting said tool means at a fixed axial and radial position on said tool holder body; an adjustment sleeve (208) on said tool holder body; bearing means (220) for supporting said tool holder body for rotation within said adjustment collar and for axially fixing said adjustment sleeve with respect to said tool holder; and drive means for adjustably positioning said sleeve with respect to said stop means (124) to adjust the

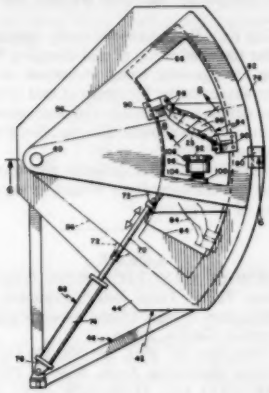
position of said stop means (124) axially of said sleeve (208) thereby to compensate for the depth of cut of said tool means (112).

4,436,461

METHOD AND APPARATUS FOR FABRICATING FUSION REACTOR COILS

Michelangelo DiMartino, San Diego, Calif., assignor to Burt Precision Products, Inc., San Diego, Calif.

Filed Jun. 4, 1981, Ser. No. 270,236
Int. Cl.³ B23C 3/04; B23D 1/02
U.S. Cl. 409—132 **11 Claims**



9. A method for machining the surfaces of an elongate, generally helical shaped, rectangular cross-section metal work piece which is to partially encircle a toroid in both the poloidal and toroidal direction when finished, the work piece having an inside surface, an outside surface, and a pair of opposite side surfaces, the method comprising the step of:

supporting the work piece with its inside surface unobstructed;

moving the work piece in the toroidal direction;

cutting the entire inside surface of the work piece in the poloidal direction while the work piece is moving in the toroidal direction;

supporting the work piece with its outside surface unobstructed;

moving the work piece in the toroidal direction; and

cutting the entire outside surface of the work piece in the poloidal direction while the work piece is moving in the toroidal direction.

4,436,462

MULTI-STOP DEPTH CONTROL

Rafael Martinez, 101 Monroe St., Garfield, N.J. 07026

Filed Jan. 21, 1982, Ser. No. 341,164
Int. Cl.³ B23B 49/00; B23C 1/06
U.S. Cl. 409—218 **7 Claims**

1. A multi-stop depth control in combination with a milling machine having a quill frame, a fixed platform extending from the frame, a quill movable in a vertical direction in the frame having a projection extending beyond the frame with a through bore therein and a scale for indicating vertical distance, comprising:

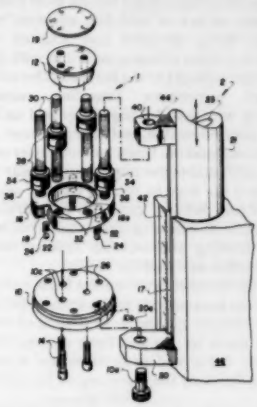
a base member fixed to the milling machine platform, the platform being vertically aligned with and below the projection;

a set wheel rotatably mounted to said base member;

position setting means connected between said wheel and said base member for establishing a plurality of firm rotary positions between said wheel and the milling machine frame;

a plurality of rods circumferentially spaced and extending upwardly from a top surface of said wheel each engageable with the quill projection through bore in one of said plurality or rotary positions when each rod is vertically aligned between the platform and the projection;

a vernier carrying element rotatably mounted on each rod and movable to any selected vertical position on each rod; and



element locking means connected to each vernier carrying element for locking each vernier carrying element at a selected vertical position on each rod respectively;

each vernier carrying element with respective rod movable into one of said plurality of said rotary positions to bring said vernier carrying element into close association with the milling machine scale for accurately setting the vertical position of each vernier carrying element on each respective rod;

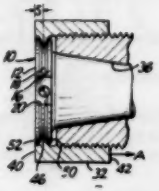
each vernier carrying element functioning as a stop for abutment with the milling machine quill projection for stopping a vertical descent of the milling machine quill.

4,436,463

QUICK CHANGE TOOLING SYSTEM

Ike D. Rea, Mount Clemens, Mich., assignor to General Electric Company, Detroit, Mich.

Filed Sep. 17, 1981, Ser. No. 303,080
Int. Cl.³ B23Q 3/12; B23B 31/02
U.S. Cl. 409—232 **10 Claims**



1. An assembly for facilitating the mounting and ejecting of cutting tools on a rotatable tool adaptor shank, said assembly comprising in combination;

an elongated tool adaptor shank having a gripping end and a driving end, with the outer surface of said shank being tapered towards said driving end and with said gripping end being defined by a cylindrical flange portion, said

flange portion having a V-shaped channel formed therein and extending circumferentially therearound, said flange portion further including a pair of opposed slots interrupting said flange portion and in communication with said channel, said slots for engaging a machine tool;

a spindle having a cylindrical configuration with the outer surface thereof being threaded and with the inner surface of said spindle being tapered and substantially conforming to the configuration of said driving end of said tool shank such that said driving end is freely receivable therein;

an elongated cylindrical nut having front and rear ends, with the inner surface of said nut, adjacent to said rear end thereof, being threaded and adapted to engage the threaded portion of said spindle and with the inner surface of said nut adjacent to the front end thereof, including two opposed projections extending radially inwardly, whereby with said driving end of said tool adaptor shank being inserted within said tapered inner surface of said spindle, and said nut being mounted over said tool adaptor shank, with said projections being initially received in said slots, said nut may be rotated causing said threaded portions of said nut and spindle to be interlocked while said projections become engaged in said channel thereby positively drawing and securely locking said tool adaptor shank within said spindle; and

wherein the distance between the front end and projections of said nut corresponds to the spacing between the center of said channel and the front surface of said gripping end of said shank so that said front end and front surface are coplanar when said projections are in said channel, to thereby facilitate the mounting of the cutting tools.

4,436,464

CLAMPING APPARATUS FOR A CUTTER

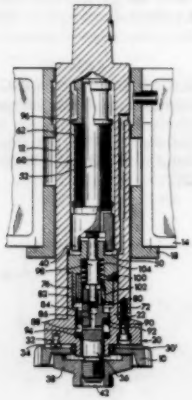
Walter Seiberlich, Ettlingen, Fed. Rep. of Germany, assignor to Maag Gear-Wheel & Machine Company Limited, Zurich, Switzerland

Filed Sep. 23, 1981, Ser. No. 304,824

Claims priority, application Switzerland, Oct. 7, 1980, 7478/80

Int. Cl.³ B23C *5/26*

U.S. Cl. 409—233 **5 Claims**



1. A clamping apparatus for a shaper cutter for a gear shaping machine, in particular a generating gear shaping machine for the production of gears, comprising:

a to-and-fro axially displaceable ram spindle;

a cutter holder provided at one end of said ram spindle;

said cutter holder possessing a contact surface for the shaper cutter;

means protruding axially away from said contact surface;

said protruding means serving for attachment of said shaper cutter;

a clamping plate secured to an end of said protruding means;

a clamping mandrel securing said clamping plate to said end of said protruding means;

said clamping plate and said clamping mandrel coacting with each other for clamping said shaper cutter at said contact surface of said cutter holder;

said ram spindle being hollow;

a spring arrangement arranged in said hollow ram spindle;

a piston arranged in said hollow ram spindle;

means for prebiasing said spring arrangement to exert an axial clamping force;

a coupling constructed such as to transmit said axial clamping force;

said coupling including means for easily releasing said coupling after the elimination of said clamping force;

said spring arrangement being connected to said cutter holder or shaper cutter by means of said coupling;

said piston defining a pressure chamber within said ram spindle and which is capable of connection with a pressure medium source; and

means for pressurizing said pressure chamber to thereby eliminate said clamping force of said spring arrangement by means of said piston.

4,436,465

SCROLL MANUFACTURING TOOL

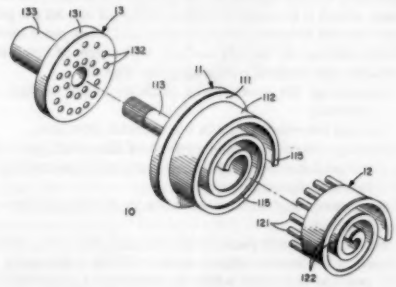
Eiji Fukushima, Fujimi, Japan; Seiichi Fukuhara, Gunma, Japan, and Masaharu Hiraga, Honjo, Japan, assignors to Sanden Corporation, Gunma, Japan

Filed May 20, 1982, Ser. No. 380,142

Claims priority, application Japan, May 20, 1981, 56-76139

Int. Cl.³ B23D *5/02, 43/06;* B23P *15/42, 15/44*

U.S. Cl. 409—243 **4 Claims**



1. A manufacturing tool for finishing a preformed scroll for use in a scroll type fluid displacement apparatus comprising:

(a) a working member having an end plate and a first involute element extending from one end surface of said end plate, a cutting edge extending along an inner side wall of an axial end of said first involute, and said end plate having a plurality of arc shaped holes along an outer side wall of said first involute element;

(b) a second involute element rotatably coupled to said working member and interfitting with said first involute element in a disposition to define a radial gap between the first and second involute elements, a cutting edge extending along an outer side wall of an axial end of said second involute, and a plurality of pins projecting axially from the other axial end of said second involute element and penetrating through said arc shaped holes, said pins being rotatably movable within said arc shaped holes; and

(c) a rotatable member having a plurality of holes extending in the axial direction, said pins having extending into axial

end portions said holes in said rotatable member to couple said rotatable member to said second involute member and to transmit the rotation of said rotatable member to said second involute element to effect relative rotation between said first and second involute elements to adjust said radial gap between them and thereby position said cutting edges into contact with said preformed scroll positioned in said radial gap to trim said scroll to finished dimensions.

4,436,466

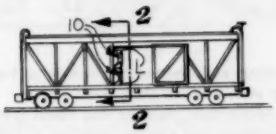
CARGO RESTRAINING APPARATUS

Frank J. Marino, 17 Battery Pl., New York, N.Y. 10017

Filed Aug. 3, 1981, Ser. No. 289,265

Int. Cl.³ B60P *7/14*; B61D *45/00*; B63B *25/24*

U.S. Cl. 410—118 **7 Claims**



1. A cargo restraining apparatus secured transversely of a transport vehicle to provide a bulkhead in said vehicle during shipment, and comprising

a rectangular panel of relatively high strength flexible sheet material, and having opposing upper and lower longitudinal edges and opposing transverse end edges, and with said upper and lower longitudinal edges being hemmed to form a passageway therealong and with the opposed ends of each passageway being open adjacent the respective corners of the panel,

flexible loading strap means slidably mounted within said passageway along each of said upper and lower longitudinal edges of said panel and crossing on one side of said panel, said flexible loading strap means generally defining a figure eight configuration on said panel, said strap means having two ends positioned adjacent each other on said one side of said panel, and means for adjustably interconnecting said two ends,

securement means connected at one end to said strap means at each of the four corners of said panel, and being connected at the other end to an adjacent anchoring structure in said transport vehicle for securing each corner of said panel thereto and in pressure contact against one side of a load to confine and restrain the load against movement during shipment, whereby said panel acts to spread the contact pressure with the load over a relatively large area, and said flexible loading strap means serves to reinforce and support said panel.

4,436,467

EASILY RELEASABLE BLIND RIVETS

Sven B. Larsson, Myrgangen 41, S-461 62 Trollhättan, and Bengt U. I. Andersson, Björkvägen 8, S-460 20 Sjuntorp, both of Sweden

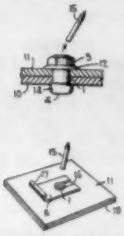
Filed Jul. 22, 1981, Ser. No. 285,855

Claims priority, application Sweden, Jul. 23, 1980, 8005318

Int. Cl.³ F16B *13/04*

U.S. Cl. 411—34 **4 Claims**

1. A blind rivet comprising a tubular member insertable through aligned holes in workpieces to be rivetted together from an outer accessible side to an inner non-accessible side, an enlarged separate retainer on one end of said tubular member having a cross-section larger than said holes on the outer side of the workpieces, said one end to be installed at said outer side, an expanding pin extending coaxially through said tubular member, an enlarged head on the inner end of said pin having a cross-section larger in size than the bore through said tubular member, but smaller than the hole in the workpiece on the inner side, a tapered expanding surface on said enlarged head of said pin on the side of said head adjacent said inner side of said tubular member so that when said expanding pin is drawn



through said tubular member a limited distance said inner end of the tubular member is expanded radially outwardly to a cross-sectional size larger than the hole in the workpiece on the inner side, said retainer being removable from said tubular member so that said rivet may be removed from the workpieces without damaging them.

4,436,468

BALL HEAD LOCK NUT AS A COMPONENT ELEMENT OF BICYCLE HEAD PARTS

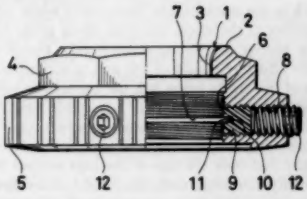
Nobuo Ozaki, and Yoshimasa Kaneko, both of Osaka, Japan, assignors to Maeda Industries, Ltd., Osaka, Japan

Filed Jul. 20, 1982, Ser. No. 399,978

Claims priority, application Japan, Jul. 20, 1981, 56-108527[U]

Int. Cl.³ F16B *39/34*

U.S. Cl. 411—248 **4 Claims**



1. A ball head lock nut as a component element of bicycle head parts, which comprises

a substantially annular body having a threaded, cylindrical internal wall,

an annular groove formed in said threaded, cylindrical internal wall,

a split clamping ring received within said annular groove,

at least one radially extending threaded through hole formed in said annular body with its inner end passing through said annular groove,

a deformable fixing piece having a diametrically extending slot formed in its inner end wall,

said deformable fixing piece being disposed within said radially extending threaded through hole, with said slot engaged with a part of said clamping ring, and

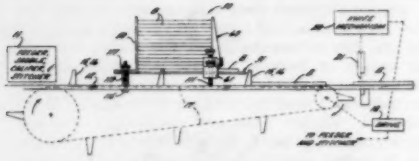
a set screw screwed into said radially extending threaded through hole to push said deformable fixing piece axially inwardly for forcible compression and deformation of said deformable fixing piece.

4,436,469

AUXILIARY FEED HOPPER FOR PERMITTING THE TRIMMING, IN A SADDLE BINDER OF PERFECT BOUND BOOKS

Eugene L. Kelly, 814 W. Shermoor St., Peoria, Ill. 61614

Filed Apr. 29, 1982, Ser. No. 373,194
Int. Cl.³ B42C 19/12; B65H 1/00
U.S. Cl. 412—16 **7 Claims**



1. A saddle binder having a delivery bed and including a three-knife trimmer at the end of the bed, the bed having a pair of slots with successive pairs of upstanding infeed lugs extending therethrough at regularly spaced intervals and with means for driving the lugs in unison synchronized with the knives in the trimmer for transporting books one by one into the trimmer, an auxiliary feed hopper for permitting the trimming, in the saddle binder, of perfect bound books comprising, in combination, a base plate having a pair of longitudinally extending slots, means for supporting the base plate horizontally superimposed above the delivery bed with the slots in the base plate and delivery bed in register with one another, a rear stock plate secured along its lower edge to the base plate and projecting vertically therefrom in a direction at right angles to the slots, a front stock guide supported on the base plate and spaced from the rear stock plate and parallel thereto, side stock guides spaced on the base plate parallel to one another, the front stock guide and side stock guides being adjustably movable with respect to the base plate and having means for clamping them in position for snugly receiving a stack of perfect bound books between them, means for supporting the front stock guide spaced above the base plate to form a gap to permit the lowermost book in the stack to feed thereunder while holding back the remainder of the stack, the front stock guide including an adjustable barrier projecting downwardly therefrom for adjusting the effective height of the gap in accordance with the thickness of the books being fed, the supporting means for the base plate including pedestals of adjustable height under the base plate spaced from one another in a two dimensional pattern for elevating the base plate relative to the delivery bed to such height that only the tips of the lugs project through the longitudinally extending slots, the height of the tips above the base plate being less than the height of the gap under the barrier.

4,436,470

RETORT CRATE LOADER AND UNLOADER

Barry L. Spletzer, and George Swiatlowski, both of Fremont, Mich., assignors to Gerber Products Company, Fremont, Mich.

Filed Oct. 30, 1980, Ser. No. 202,218
Int. Cl.³ B65G 57/08
U.S. Cl. 414—36 **7 Claims**

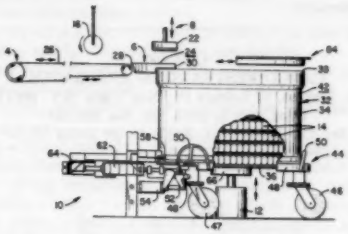
1. Apparatus for loading containers into a retort crate, said retort crate mounted on a movable carriage, said containers arranged in said retort crate in a plurality of levels, said retort crate having a movable bottom member and an open top, said top bounded by a top edge, comprising:

a container conveyor means including a dead plate at one end, said dead plate having an inner edge adjacent said one end and an outer edge opposite said inner edge;

means for positioning said carriage and retort crate therewith to a first position, said crate in said first position having a portion of said top edge below said dead plate and between said inner and outer edges of said dead plate;

means for vertically indexing said movable bottom member to a plurality of load positions;

a jar clamp mounted for vertical movement above said dead plate so that containers situated on said dead plate adjacent the outer edge thereof can be secured between said jar clamp and said dead plate; and



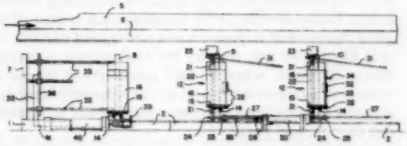
means for horizontally indexing said retort crate between said first position and a second position, said second position being farther from said inner edge of said dead plate than said first position, whereby a settling space for said containers is provided within said crate.

4,436,471

METHOD AND APPARATUS FOR STACKING FOR BARS AND THE LIKE

Charles F. Koehler, c/o American Drawn Steel Corporation, P.O. Box 54, Allison Park, Pa. 15101

Filed Feb. 2, 1981, Ser. No. 230,751
Int. Cl.³ B65G 57/03
U.S. Cl. 414—36 **9 Claims**



1. Stacking apparatus for bars and the like comprising an elongate run-in table having a feed axis lengthwise of said run-in table, a plurality of stacking guides arranged parallel to the run-in table and offset from the axis thereof at different distances, and bar deflector means associated with at least some stacking guides, each deflector means being rotatable about a vertical axis and movable between a first position substantially transverse to the feed axis in a plane generally sloping from the horizontal in which the deflector means bridge across the stacking guide and a second position in which the deflector means are substantially parallel to the feed axis and are clear of the stacking guide for deposit of bars and the like in the stacking guide, said deflector means when positioned in bridging position acting to receive bars from the run-in table and deflect them from the associated stacking cradle.

4,436,472

SHEET PILING DEVICES

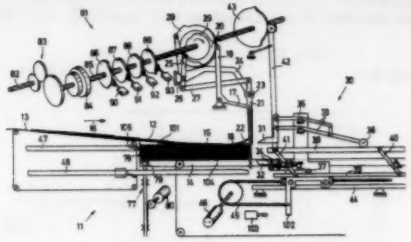
Otto Kunzmann, Neuffen, Fed. Rep. of Germany, assignor to Bielomatik Leuze GmbH & Co., Fed. Rep. of Germany

Filed Nov. 17, 1981, Ser. No. 322,176

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1980, 3046107

Int. Cl.³ B65H *31/32*

U.S. Cl. 414—50 10 Claims



2. An apparatus for successively stacking and removing piles of sheets conveyed to the apparatus, comprising:

two alternatively operable carrier elements for the piles;

means operable at the front edge of the pile, relative to the transport direction, for separating finished piles from subsequently conveyed sheets;

means for removing finished piles;

first means for alternatively driving each said carrier element along the sheet transport direction, the leading edge of each said carrier element moving near the trailing edge of a finished pile being removed and substantially in a plane defined by the top surface of the finished pile; and,

second means for alternatively driving each said carrier element along the sheet piling direction, substantially perpendicular to the sheet transport direction, whereby the carrier elements alternatively support newly forming piles until each completed pile is engaged by the pile removal means.

4,436,473

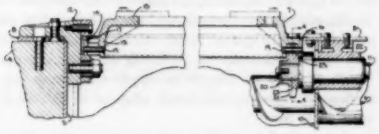
DRIVE MECHANISM FOR A ROTATABLE SWEEP ARM

George E. Olson, Arlington Heights, Ill., assignor to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.

Filed Apr. 5, 1982, Ser. No. 365,495

Int. Cl.³ B65G *65/46*

U.S. Cl. 414—310 11 Claims



6. In a storage structure to contain a stored material, a material dislodging and conveying member mounted for rotation in the structure about a vertical axis and disposed to dislodge the stored material and convey the dislodged material toward said axis, a turntable connected to the inner end of said dislodging and conveying member and including a plurality of radially extending circumferentially spaced drive pins, a drive member having a plurality of teeth disposed to engage said drive pins, and drive means for rotating said drive member, said turntable including a plurality of vertically extending material conducting passages disposed in vertical alignment with the spaces between adjacent drive pins, the upper end of each passage having a greater cross sectional area than the lower end of said passage, said drive member comprises a sprocket, the base portions of adjacent sprocket teeth being connected by root sections, said root sections having sloping relief pockets, rotation of said drive member will rotate said turntable and said dislodging and conveying member about said axis, said teeth acting to drive the stored material upwardly through said passages and downwardly through said pockets as said sprocket rotates to thereby prevent jamming of said teeth by said stored material.

4,436,474

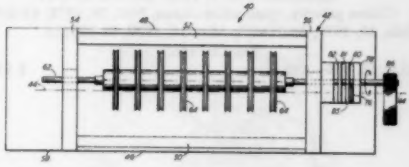
SELECTING ARTICLES FROM AN ARRAY THEREOF

James W. Brossman, Jr., Bethel; Carol A. Nemeth, Reading, and Alan K. Shapiro, Shillington, all of Pa., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Jan. 4, 1982, Ser. No. 337,051

Int. Cl.³ B65B *19/34*

U.S. Cl. 414—417 13 Claims



1. Apparatus for selecting at least one planate article from an array thereof, comprising:

a carrier for holding such articles in a mutually spaced, substantially parallel relationship along a single file by supporting peripheral portions of each article in opposing guides formed along opposing first and second sides of said carrier;

means for positioning the carrier so the file of articles extends substantially along a positioning plane passing generally centrally of each article and of said positioning means;

a rotatable shaft extending parallel to and indexable along the file and adjacent to the articles;

at least one cam mounted eccentrically to the shaft such that when said shaft is rotated a convex portion of said cam moves arcuately toward and slidably engages edge portions of an article to displace said article; and

means for indexing the shaft and cam along the file and for rotating the same such that selected articles therein are engageable for displacement.

4,436,475

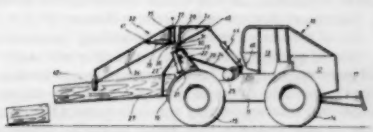
LOG SKIDDER WITH LOAD DISTRIBUTING BOOM ATTACHMENT

Leon Blagg, Marble Falls, Tex., assignor to Rolligon Corporation, Stafford, Tex.

Filed Feb. 16, 1982, Ser. No. 348,801

Int. Cl.³ B66D *3/00*

U.S. Cl. 414—569 10 Claims



1. Apparatus for use with a log skidder vehicle having front and rear ground-engaging wheels, a frame, a logging arch at the rear of said frame, and winch and cable means for pulling the end of a log up to the rear of the vehicle and elevating the end portion thereof, comprising: an elongated boom structure having a front section and a rear section; means for pivotally

mounting said boom structure at a location between its ends on said logging arch, said mounting means defining a transverse horizontal pivot axis; abutment means on the rear section of said boom structure arranged to engage the elevated end portion of the log in response to pivotal rotation of said boom structure about said axis; and selectively operable means connected between said front section and said frame for causing upwardly directed forces to be applied to said front section and to said arch, and downwardly directed forces to be applied to said log and said frame to thereby control the distribution of weight carried by the front and rear wheels of said vehicle.

4,436,476

ROD DEVICE FOR USE AS AN ARM OF AN EXCAVATOR

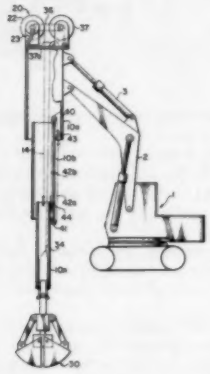
Ryutaro Yoritomi, 5-17-12, Koishikawa, Bunkyo-ku, Tokyo, Japan

Continuation of Ser. No. 90,325, Nov. 1, 1979, abandoned. This application Dec. 7, 1981, Ser. No. 327,911

Claims priority, application Japan, Nov. 24, 1978, 53-145033; Feb. 10, 1979, 54-014601; May 14, 1979, 54-058773

Int. Cl.³ E02F *5/22*

U.S. Cl. 414—690 **9 Claims**



1. An excavator comprising:

a base structure;

a boom pivotally attached to said base structure at a first end and having a second end;

an excavator head;

an excavator head supporting arm including;

a plurality of telescopic tubular elements including an outermost element, at least one intermediate element and an innermost element, the outermost element being pivotally mounted to said second end of said boom at substantially an intermediate portion thereof, said excavator head being mounted to said innermost element;

movement restricting means for limiting the relative axial movement between adjacent ones of said telescoping elements; and

cable telescopic control means connected between said outermost element and innermost element of said plurality of tubular elements for controlling the axial extension of said excavator head supporting arm; and

fluid pressure operated linear actuator means having relatively movable opposite ends for pivotally tilting said excavator head supporting arm with respect to said boom, one of said opposite ends being pivotally connected to substantially a middle portion of said boom while the other of said opposite ends is pivotally connected to a portion of said outermost tubular element substantially distant from the pivot point between said outermost tubular element and said second end of said boom towards the one end thereof being opposite to the other end thereof for supporting said excavator head; wherein said relative axial movement restricting means includes first and second pulleys mounted on said at least one intermediate element of said tubular elements adjacent its opposite ends, and first and second cables engaged around said two pulleys, said cables each being connected at their opposite ends with an end portion of adjacent tubular elements which engage with opposite ends of said at least one intermediate element.

4,436,477

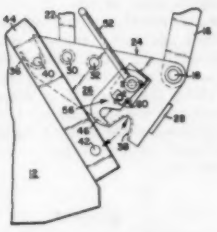
QUICK ATTACHMENT CARRIER ASSEMBLY

John B. Lenertz, Carver County, and Carroll E. Moore, Sibley County, both of Minn., assignors to Farmhand, Inc., Hopkins, Minn.

Filed Mar. 25, 1982, Ser. No. 361,509

Int. Cl.³ E02F *3/81*

U.S. Cl. 414—723 **2 Claims**



1. Apparatus for releasably connecting a material handling attachment to a loader, comprising:

a pair of laterally spaced apart upper transverse pins secured to the attachment;

a pair of laterally spaced apart lower transverse pins secured to the attachment beneath said upper transverse pins;

a pair of laterally spaced apart carriers secured to the front end loader, each carrier including an upwardly open top notch adapted to receive an upper transverse pin and a forwardly open bottom notch adapted to receive a lower transverse pin;

a hook mounted on at least one of said carriers for pivotal movement between a latched position in engagement with the corresponding lower transverse pin and an unlatched position;

handle means for manually actuating said hook between the latched and unlatched positions; and

means for releasably locking said hook in either position;

said releasable locking means including;

a latch plate mounted on said carrier adjacent said hook with holes therein corresponding to the latched and unlatched positions of said hook;

a locking pin mounted on said hook for movement toward and away from said latch plate; and

means for normally biasing said locking pin toward a locked position in registry with either hole in said latch plate.

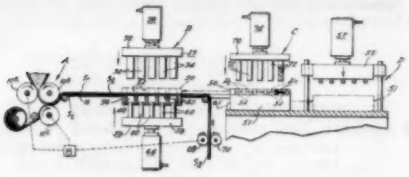
4,436,478
APPARATUS FOR MAKING MOLDED ARTICLES

Roland M. Allen, Kenilworth, and Andrew J. Kalocai, Pottstown, both of Pa., assignors to The West Company, Phoenixville, Pa.

Division of Ser. No. 286,977, Jul. 27, 1981, abandoned, which is a continuation of Ser. No. 142,028, Apr. 21, 1980, abandoned, which is a continuation of Ser. No. 13,252, Feb. 21, 1979, abandoned, which is a continuation of Ser. No. 743,071, Nov. 18, 1976, abandoned, which is a division of Ser. No. 473,216, May 24, 1974, abandoned. This application Feb. 7, 1983, Ser. No. 464,281

Int. Cl.³ A61J 1/06; B29H 3/06

U.S. Cl. 414—752 3 Claims



1. Apparatus for handling a plurality of clad elements of a predetermined configuration formed from a sheet consisting of a layer of an elastomeric material bonded to a layer of inert material and deposited in openings of a die corresponding in number and arrangement to cavities of a mold comprising a transfer mechanism having a plurality of rods having a pickup face with at least one fluid port, said rods corresponding in number and array to the die openings and mold cavities, means for selectively connecting said fluid port to a source of vacuum to retain a clad element on said pickup face when it engages the element in the die openings and to an air pressure source to discharge the clad element in the cavity of a mold, and a reciprocating punch having a plurality of punch rods for forming the clad elements from the sheet material and depositing them in the openings of the die and wherein said die and mold are positioned adjacent one another and said transfer mechanism includes means mounting it for translating movement between a first position overlying said die with the punch rods aligned with the die openings and a second position overlying the mold with the pickup rods aligned with the mold cavities.

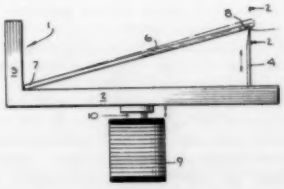
4,436,479
METHOD AND MEANS FOR ORIENTING BEVEL TIPPED NEEDLES AND THE LIKE

Archille Belloli, Milan, Italy, assignor to Joule' Technical Corporation, Union, N.J.

Filed Aug. 16, 1982, Ser. No. 408,466

Int. Cl.³ B65G 47/24

U.S. Cl. 414—757 8 Claims



1. Means for orienting an elongated article with a shank portion and a flat or bevelled portion comprising the combination of a fixture with spaced stop and knife edge means, said knife edge means positioned at a level above the stop and at a distance from the stop causing it to engage the article intermediate in the ends of its flat portion, and means for vibrating said knife edge means.

5. A method for orienting elongated articles having shank portions and bevelled tips comprising the steps of supporting the articles between a stop and a knife edge with the knife edge engaging the bevelled tips and the stop engaging the opposite end, and vibrating the knife edge.

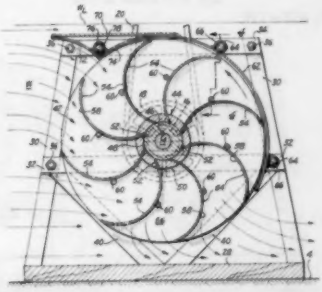
4,436,480
HYDRO-TURBINE DEVICE FOR GENERATING ELECTRICITY

Philip Vary, 100 SW. Hideaway, Stuart, Fla. 33494

Filed Jun. 23, 1982, Ser. No. 391,471

Int. Cl.³ F03B 7/00

U.S. Cl. 415—2 R 4 Claims



1. A hydro-turbine device for generating electricity from the flow of water through a channel, comprising:

frame means mountable in said channel;

a horizontal, rotatable shaft carried by said frame means and disposed to extend transversely of the direction of water flow through said channel, said shaft being adapted to be connected to generator means;

hub means mounted on said shaft;

a pair of spaced end plates received on said shaft, said hub means extending between said end plates;

at least six equally spaced vanes fixedly mounted to extend between said end plates parallel with said shaft, said vanes extending radially from said hub means and being curved so that the rear faces thereof are concave;

said end plates, said hub means and said vanes forming a turbine wheel disposed so that the front thereof faces water flowing through said channel and so that the rear faces of said vanes are exposed to said flowing water as they move downwardly from the top toward the bottom of said wheel;

cover means mounted over the rear of said turbine wheel, said cover means being carried by said frame means and extending from the top of said wheel rearwardly and downwardly to a termination point spaced upwardly from the bottom of the wheel but below a horizontal plane containing the axis of said shaft;

an extension on said cover means extending forwardly generally tangentially from the top of said wheel, the forward edge thereof being positioned generally above the forward edge of said turbine wheel; and

an arcuate scoop mounted on said extension and extending downwardly and rearwardly from the forward edge thereof toward and nearly into engagement with said vanes of said turbine wheel, the inner, lower edge of said arcuate scoop being positioned about 30 degrees removed from a vertical plane containing said shaft, said scoop serving to capture water flowing toward said wheel and direct it centrally against the concave rear face of each

vane as the vane moves downwardly between about 30 and 60 degrees from said vertical position;

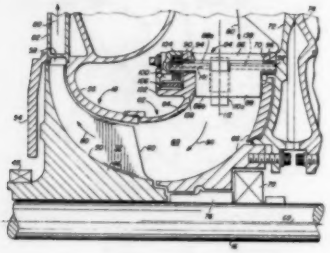
said frame means being arranged to mount said shaft so that the bottom of said turbine wheel is spaced above the bottom of said channel so that a substantial flow of water passes under the wheel, said water flowing under the turbine wheel being effective to remove spent water from behind the vanes in the region between the bottom of said wheel and the bottom edge of said cover means, through aspirator-like action.

4,436,481

INTAKE VORTEX WHISTLE SILENCING APPARATUS AND METHODS

Charles G. Linder, Chandler, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jun. 15, 1981, Ser. No. 273,716
Int. Cl.³ F04B *29/66*
U.S. Cl. 415—119 **22 Claims**



1. A gas intake assembly comprising:

(a) a body having an axis, a gas inlet, a gas outlet spaced apart from said inlet, and a gas flow passage communicating with said inlet and outlet, each of said inlet, said outlet and said flow passage circumscribing said axis;

(b) means for inparting to gas entering said inlet and traversing said flow passage a vortex flow pattern in which the gas swirls about said axis; and

(c) means for disturbing only a relatively small, radially outermost portion of said vortex flow pattern, without significantly distupting the remainder thereof, to attenuate whistle noise generated by said vortex flow patters,

said imparting means including a series of inlet guide vane means positioned in a mutually spaced relationship around said gas inlet, said disturbing means including at least one vortex-disturbing member and means for positioning each said vortex-disturbing member in the path of said vortex flow pattern adjacent said gas inlet, said positioning means including means for connecting each said vortex-disturbing member to one of said guide vane means.

4,436,482

CONSTANT SHIP SPEED CONTROL METHOD

Morio Inoue, Yokohama; Satoshi Hoshino, Tokyo; Hideki Namura, Yokohama, and Takashi Watari, Kamakura, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 17, 1981, Ser. No. 303,021
Claims priority, application Japan, Sep. 19, 1980, 55-129198
Int. Cl.³ B63H *3/10*
U.S. Cl. 416—1 **3 Claims**

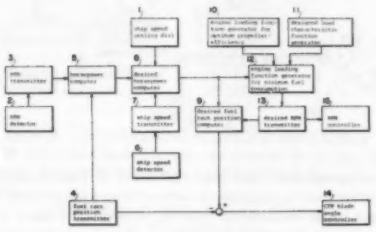
1. A method for controlling the speed of a ship which includes a main engine for driving a main shaft at a given rpm, a fuel rack adapted to be positioned for setting the horsepower generated by the main engine, a controllable pitch propeller having a variable blade angle connected to the main shaft, and a ship speed detector, said method comprising the steps of:

determining the actual horsepower of the main engine in accordance with the main engine fuel rack position and the main shaft rpm;

determining a desired horsepower corresponding to a desired ship speed in accordance with the detected ship speed from the ship speed detector, the actual horsepower of the main engine, and a preset ship speed;

generating a first function of first fuel rack position and first main shaft rpm which provides an optimum propeller efficiency in accordance with said preset ship speed and generating a second function of a second fuel rack position and a second main shaft rpm;

comparing said first and second functions so as to define a range related to said second function where use of said first function results in a rich torque and a second range where use of said first function results in no rich torque,



thereby generating a minimum fuel characteristic function;

determining a desired engine rpm in accordance with said minimum fuel characteristic function and said desired horsepower;

controlling the rpm of the main shaft in accordance with said desired rpm;

determining a desired fuel rack position in accordance with the desired rpm and said desired horsepower;

comparing said desired fuel rack position and the main engine fuel rack position to obtain a difference therebetween; and

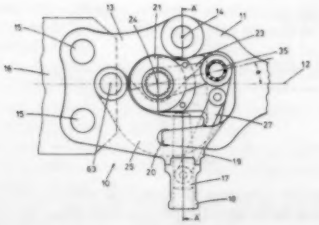
controlling the blade angle of the controllable pitch propeller in accordance with said difference thereby to attain efficiency in operation.

4,436,483

HELICOPTER ROTORS

Kenneth Watson, Yeovil, England, assignor to Westland plc, Yeovil, England

Filed Jan. 8, 1982, Ser. No. 338,103
Claims priority, application United Kingdom, Jan. 22, 1981, 8101871
Int. Cl.³ B64C *11/28, 27/50*
U.S. Cl. 416—143 **16 Claims**



1. A helicopter rotor having a rotor hub, a blade pivotally

connected to the hub for movement between an operational spread position and a folded position about a generally vertical fold axis (14) located at one side of a longitudinal centerline, at least one laterally extending lock pin for locking the blade in the spread position and a powered fold mechanism comprising a reversible rotary power source for rotation about a generally vertical rotation axis (24) coincident with the centreline, a lever (23) rotationally fixed to the power source, a curved link having one end pivotally attached to the blade about a vertical pivot axis (63) spaced-apart radially of the axis (24) and its other end pivotally attached about a vertical pivot axis (35) to the free end of said lever and an arm pivotally attached between the curved link and the said lock pin, wherein with the blade in the spread position the said vertical pivot axis (35) is located in an over-center position and at an acute angle relative a line extending through the said rotation axis (24) and the pivot axis (63) and on the same side of the line as the fold axis (14).

4,436,484

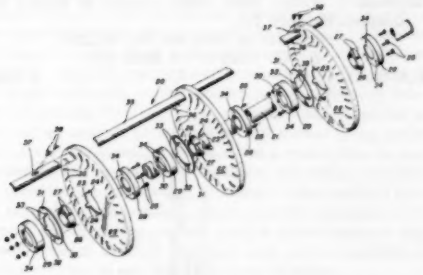
TRANSVERSE FLOW FAN ROTOR

William F. Temple, and Jesse Daniels, both of Albany, Ga., assignors to Lilliston Corporation, Albany, Ga.

Filed Apr. 19, 1982, Ser. No. 369,607

Int. Cl.³ F04D 29/28

U.S. Cl. 416—178 **7 Claims**



1. A transverse flow fan rotor comprising a central axial rotor shaft, a plurality of axially spaced coaxial rotor discs of a uniform diameter on the rotor shaft and having central through openings receiving said shaft, said through openings having circumferentially spaced radial locator notches, conically tapered split constrictive bushings surrounding said shaft within the through openings, axially opposing substantially rigid pairs of clamping collars surrounding said shaft on opposite sides of said discs, one clamping collar of each pair having a conically tapered cavity receiving at least a part of the adjacent constrictive bushing, the opposing collar in each pair engaging the adjacent end face of the constrictive bushing to force it wedgingly into said cavity, a compressible shim element disposed between each disc and the adjacent end face of one of said clamping collars to compensate for tolerance vaiations, the clamping collars having bolt receiving openings formed therethrough in coaxial alignment with said locator notches, clamping bolts extending through the bolt receiving openings and locator notches, the discs each having a multiplicity of circumferentially equidistantly spaced fan blade mounting slots formed therethrough near and inwardly of their peripheries and spaced radially of the axis of said shaft in concentric relationship therewith, the blade mounting slots of the disc being in axial alignment, a corresponding number of elongated substantially equal length fan blades engaging through said slots of the disc and being supported therein relatively loosely, said fan blades having longitudinal slots formed therethrough at least adjacent to one of said discs and the slots being positioned within the blade mounting slots of the disc and extending on opposite sides of the disc, and pairs of releasable and readily removable spring locking elements engaged within said longitudinal slots of said blades on opposite sides of the disc and restraining the blades against axial displacement relative to said discs during the operation of the fan rotor and allowing ready removal and replacement of individual blades when required.

4,436,485

TURBINE WHEEL WITH INTEGRAL DS BLADES AND EQUIAXED HUB

George L. Vonnegut, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 896,709, Apr. 17, 1978, Pat. No. 4,240,495.

This application Jul. 31, 1980, Ser. No. 174,034

Int. Cl.³ F01D 5/14

U.S. Cl. 416—241 R **2 Claims**

1. A cast metal turbine wheel comprising a cylindrical disc and integral turbine blades arrayed about the perimeter of said disc;

the grain structure of the metal of said blades being columnar, the grains being predominantly oriented lengthwise in the radial direction, substantially parallel to the leading and trailing edges of said blades;

the grain structure of the metal in said disc being predominantly equiaxed.

4,436,486

CIRCULATING PUMP UNIT

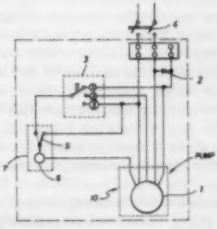
Niels D. Jensen, Bjerringbro; Horst Komossa, Wittenborn, and Kurt F. Nielsen, Bjerringbro, all of Denmark, assignors to Grundfos A/S, Bjerringbro, Denmark

Filed Jun. 11, 1981, Ser. No. 272,782

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1980, 3022872

Int. Cl.³ F04B 49/06

U.S. Cl. 417—45 **3 Claims**



1. A circulating pump system, comprising:

(a) a motor capable of operating in a plurality of operating modes, including at least a highest moment mode and a lowest moment mode, said motor having a current circuit;

(b) a pump mechanically connected to and driven by said motor;

(c) a rotation speed switch having an input terminal and a plurality of output terminals, each of said output terminals corresponding to one of said operating modes such that when one of said output terminals is electrically connected to said input terminal, said motor operates in said corresponding mode;

(d) a plurality of output leads, each of said output leads being electrically connected at one end to one of said output terminals and in turn corresponding to one of said operating modes; and

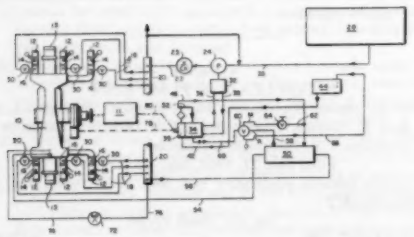
(e) a thermostat having a temperature-sensing means and a start up switch operatively connected to said temperature-sensing means, said start up switch being responsive to a predetermined temperature condition in said motor, said predetermined temperature condition occurring only when said motor is stopped, said start up switch having a response to the detection of said predetermined temperature condition by said temperature-sensing means, said response being to override said rotation speed switch by electrically connecting said current circuit to that one of said leads which corresponds to said highest moment mode, thereby placing said motor in said highest moment mode and bypassing said rotation speed switch, and then in response to the cessation of said predetermined temperature condition, to cease overriding said rotation speed switch by electrically connecting said current circuit to said input terminal, thereby placing said motor in the mode corresponding to that one of said output terminals which is electrically connected to said input terminal.

4,436,487

FOAM LIQUID CONCENTRATE SUPPLY SYSTEM

Fay A. Purvis, Malvern; Robert W. Bennett, Dowingtown, and Roger A. Ruth, Glenmoore, all of Pa., assignors to Enterra Corporation, Radnor, Pa.

Filed Jun. 29, 1982, Ser. No. 393,511
Int. Cl.³ A62C *35/44*; G05D *11/00*; F04B *49/08*
U.S. Cl. 417—46 **10 Claims**



1. For use with a motor-driven water pump of the type having at least one outlet through which water may be pumped, said outlet having associated therewith a first valve and a fluid pressure drop inducing device, said first valve being operable to open and close said outlet and said pressure drop inducing device being operable to admit a liquid chemical additive into said outlet at a flow rate which is directly proportional to the flow rate of the water being pumped therethrough when said first valve is open, a system for supplying a liquid chemical additive to said pressure drop inducing device, comprising:

a liquid chemical additive storage tank;

an additive pump connected respectively by suction and discharge conduits to said storage tank and to said pressure drop inducing device;

a second valve arranged in said discharge conduit, said second valve being operable when closed to isolate said pressure drop inducing device from said additive pump, and being operable when open to a selected setting to meter the amount of liquid chemical additive supplied to said pressure drop inducing device;

a variable output hydraulic drive means for powering said additive pump; and

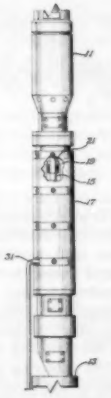
control means responsive to the water pressure developed by said water pump and to the liquid chemical additive pressure developed by said additive pump for varying the power output of said hydraulic drive means in order to maintain said water pressure and said liquid chemical additive pressure in balance irrespective of changes in water pump flow rate, water pump operating pressure, and the setting of said second valve.

4,436,488

BELOW MOTOR PRESSURE COMPENSATION SYSTEM FOR SUBMERSIBLE PUMP

Raymond L. Witten, Tulsa, Okla., assignor to Hughes Tool Company, Houston, Tex.

Filed May 26, 1981, Ser. No. 267,224
Int. Cl.³ F04B *35/04*; H02K *5/12*
U.S. Cl. 417—53 **2 Claims**



1. A method of installing in a well a submersible pump assembly of the type having an electric motor contained within a lubricant filled motor chamber below a pump, comprising:

providing a pressure compensator chamber below the motor chamber;

providing a passage between the pressure compensator chamber and a communication port in the motor chamber;

mounting in the pressure compensator chamber an expansible container having an interior sealed from lubricant in the pressure compensator chamber;

providing a port from the exterior of the pressure compensator chamber to the interior of the container;

placing into the container a liquid of specific gravity greater than the specific gravity of the lubricant and selected to provide a total weight for the container that substantially equals the weight of the lubricant in the motor chamber above the communication port; then

lowering the pump assembly into the well.

4,436,489

CONTROL DEVICE FOR A LIQUID PUMP WITH ADJUSTABLE PUMPING VOLUME

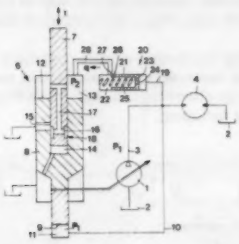
Jan Zangenberg, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Mar. 19, 1982, Ser. No. 359,756

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1981, 3112561

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—218 **3 Claims**



1. A control unit for a pump of the type having adjustable volume control means, comprising, a tank port, a motor speed control setting unit having first and second pressure chambers and a moveable valve element having first and second smaller and larger pressure faces as moveable walls of said pressure chambers, means connecting said moveable valve element to said pump adjustable volume control means, a pressure independent constant flow regulator having an outlet connected to said second pressure chamber, first and second pump outlet ports connected respectively to said first pressure chamber and the inlet of said constant flow regulator, said setting unit having speed setting valve means including a valve member having adjustable fixed positions relative to said moveable valve element and providing variable throttle means between said second pressure chamber and said tank port to establish a control pressure in said second pressure chamber.

4,436,490

COMPRESSOR AND LUBRICATING PUMP ASSEMBLY

Siegfried Schönwald, Bad Neustadt-Saale, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 27, 1982, Ser. No. 382,685

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1981, 3123631

Int. Cl.³ F04B *39/02*

U.S. Cl. 417—372 **6 Claims**

1. A unitary compressor assembly comprising:

a compressor with an external-rotor drive motor, both mounted on a stationary shaft which has a bore shaft canal for supplying lubricant to the compressor, a friction pump located at the opposite end of the stationary shaft from the compressor, and a unitary housing;

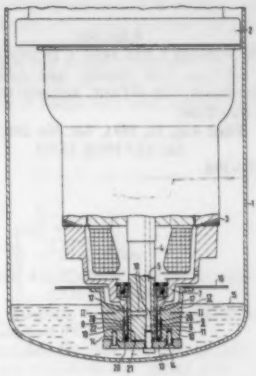
the friction pump further comprising:

an impeller comprising a hollow cylinder, the cylinder coupled to the external rotor of the drive motor;

a pump housing mounted on the shaft, the pump housing comprising inner and outer parts providing an annular space in which the hollow cylinder is received, the cylinder dividing the annular space into an inner gap and an outer gap;

an outlet coupling the annular space to the borehole;

an inlet coupling the annular space to a supply of oil in the bottom of the unitary housing; and



at least one constriction in each gap for impeding the flow of oil.

4,436,491

METHOD OF SUPPLYING HYDRAULIC OPERATING FLUID IN DIAPHRAGM TYPE

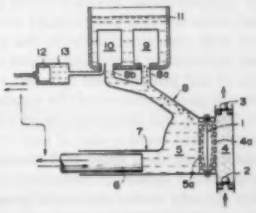
Masashi Ishiyama, Minami-ashigara, and Michinori Ishibashi, Higashimurayama, both of Japan, assignors to Fuji Photo Film Co., Ltd. and Nikkiso Co., Ltd., of JPX

Continuation of Ser. No. 107,647, Dec. 27, 1979, abandoned. This application Feb. 4, 1982, Ser. No. 345,704

Claims priority, application Japan, Dec. 20, 1978, 53-161579

Int. Cl.³ F04B *9/10*

U.S. Cl. 417—385 **3 Claims**



1. In the method of supplying hydraulic operating fluid in a diaphragm type pump in which a diaphragm is driven by an operating fluid and operating fluid is supplied to an operating chamber from an oil reservoir at the final stage of a suction stroke in the main cylinder of the pump, the improvement comprising instantaneously supplying a predetermined minute amount, between about 0.1 and about 2% of the whole volume of the displacement of the diaphragm, of operating fluid, said predetermined minute amount being delivered through a valve,

(a) said valve being provided with a piston in a chamber operating between an enable position wherein operating fluid from said reservoir can pass to said operating chamber and a disable position wherein passage of said operating fluid is blocked;

(b) being urged into its disable position by a spring;

(c) said piston being urged by a selectively applied external pressure oil to move it to its enable position;

(d) said valve being provided with a leakage hole in the wall of the chamber, said leakage hole being just below the top of the piston when the piston is in the disable position and

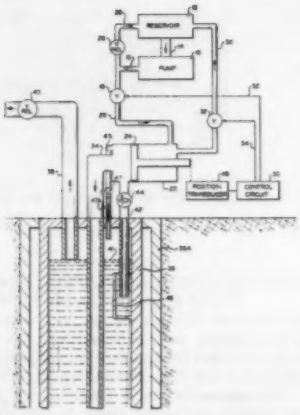
being blocked by the piston when the piston is in the disable position and being open to passage of the external pressure oil when the piston is in the enable position.

4,436,492

SURFACE POWER UNIT FOR A DOWNHOLE PUMP

Daniel G. Peterson, Los Angeles, and John W. Erickson, Huntington Beach, both of Calif., assignors to Kobe, Inc., City of Commerce, Calif.

Filed Aug. 31, 1981, Ser. No. 298,121
Int. Cl.³ F04B *35/02*
U.S. Cl. 417—386 **4 Claims**



1. A surface power unit for use on a subterranean well for applying pulses of fluid to a downhole pump in the well bore comprising: cylinder means having a piston slidably disposed therein, said piston dividing said cylinder into a charging side and a power side; means responsive to the movement of said piston in said cylinder for generating control signals representing positions of said piston in said cylinder; means responsive to at least one of said control signals for connecting a source of pressurized fluid to said charging side of said cylinder, and responsive to at least another one of said control signals for alternatively venting fluid from said charging side of said cylinder; and conduit means for connecting said power side of said cylinder directly to the downhole pump; a return pipe connected between the well bore and said power side of said cylinder and having a check valve positioned therein for permitting fluid flow only from the well bore to said cylinder.

4,436,493

SELF CONTAINED PUMP AND REVERSING MECHANISM THEREFOR

William S. Credle, Jr., Stone Mountain, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Continuation-in-part of Ser. No. 77,544, Sep. 21, 1979, abandoned. This application Nov. 12, 1981, Ser. No. 320,584
Int. Cl.³ F04B *43/06*
U.S. Cl. 417—393 **63 Claims**

1. A reciprocating pump and reversing mechanism therefor comprising in combination:

a housing having a pair of laterally spaced chambers with diaphragm members therein dividing each of said chambers into a driving section and a discharge section;

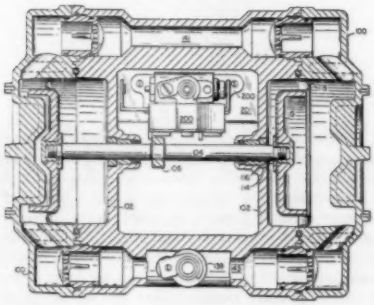
said diaphragm members being interconnected by a common shaft;

a protrusion extending from said common shaft;

manifold means in said housing for transmitting fluid to and from said driving sections and discharge sections of said chambers through fluid inlet and outlet ports therein;

inlet and outlet check valves in selected ones of said ports for controlling the flow of liquid to be pumped to and from said discharge sections through said manifold means, said check valves being contained within cartridges, said cartridges having a universal shape which will fit into either said inlet or outlet ports of oriented consistent with a proper fluid flow direction, and having coded configurations on each said check valve cartridge which preclude the insertion thereof into said inlet or outlet port inconsistent with said proper predetermined fluid flow direction; and

a reversing mechanism module contained within a common housing removably attached to said pump between said discharge chambers and adjacent said common shaft, said module including,



control valve means for directing driving fluid alternately to a selected one of said driving sections defined by said diaphragms in said lateral chambers, a valve actuating member mounted adjacent to said shaft for sliding movement on bearing surfaces between first and second positions partially in response to engagement by said protrusion, said valve actuating member constraining said control valve means to alternately direct said driving fluid to the respective driving sections in said first and second positions of said actuating member, and snap-acting means for accelerating and biasing said valve actuating member against any tendency to stop between said first and second positions, said snap-acting means including a pair of opposed coil springs attached to the bottom of said actuator and disposed on opposite sides of an axis which is parallel to a longitudinal axis of said shaft, said coil springs exerting equal and opposite forces on said valve actuating member in directions transverse to said axis throughout the positions of movement on said surfaces.

4,436,494

PLUNGER PUMP

Kazuo Yamaizumi, Tokyo, Japan, assignor to Nagano Keiki Seisakusho, Ltd., Tokyo, Japan

Filed Oct. 29, 1981, Ser. No. 316,169
Claims priority, application Japan, Mar. 20, 1981, 56/40839
Int. Cl.³ F04B *21/00*
U.S. Cl. 417—403 **7 Claims**

1. A plunger pump, comprising:

an elongate and hollow plunger case having an inlet port and an outlet port;

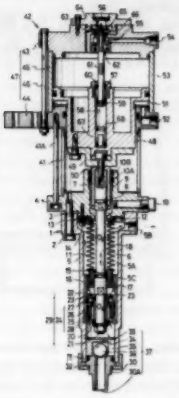
an elongate plunger reciprocally mounted in said plunger case;

drive means for effecting a reciprocal driving of said plunger;

inlet valve means on said plunger case adapted to control the input of fluid through said inlet port;

discharge valve means on said plunger spaced axially along said plunger from said inlet valve means and being adapted to control the output of fluid from said outlet port and in response to reciprocations of said plunger;

an elongate bellows encircling a portion of said plunger and being connected at one end to one end of said plunger case and extending in the interior of said plunger case, the other end of said bellows being connected to said plunger,



the outer surface of said plunger being spaced from the interior surface of said plunger case to define a flow path therebetween for said fluid;

seal means for providing a fluid tight seal at the connections of said bellows to said plunger case and said plunger; and

bellows deformation prevention means for preventing abnormal deformations of and maintaining a uniform diameter of said bellows as said plunger is reciprocated.

4,436,495

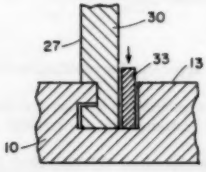
METHOD OF FABRICATING TWO-PIECE SCROLL MEMBERS FOR SCROLL APPARATUS AND RESULTING SCROLL MEMBERS

John E. McCullough, Carlisle, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Mar. 2, 1981, Ser. No. 239,563

Int. Cl.³ F01C *1/02, 21/08;* **B23P** *11/00*

U.S. Cl. 418—55 **15 Claims**



1. A method of fabricating a scroll member having an involute wrap rigidly affixed to an end plate, comprising the steps of:

(a) forming in the surface of an end plate an involutely configured channel;

(b) forming a reentrant groove in one side wall of said channel along its length;

(c) providing an involute wrap sized and configured to seat in said channel and having a surface configured to at least partially engage said reentrant groove along its length;

(d) seating said wrap into said channel thereby to define a locking space between the flank of said wrap and the other side wall of said channel; and

(e) locking said wrap in said channel into fixed engagement with said end plate wherein said locking comprises the steps of inserting a locking strip formed of material which has sufficient flexibility to permit it to be wound into said locking space and sufficient ductility to allow it to be coined into said locking space and coining said locking strip thereby to wedge said wrap into said channel.

4,436,496

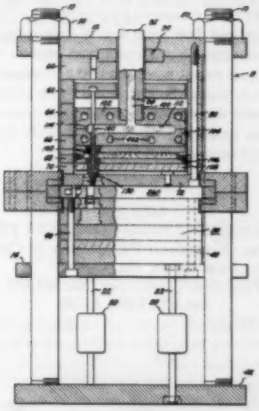
MOLD FOR A LIQUID INJECTION MOLDING COMPOSITION

Aldo A. Laghi, Saratoga, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Jun. 10, 1981, Ser. No. 272,242

Int. Cl.³ B29F *1/05;* **B29G** *3/00*

U.S. Cl. 425—543 **11 Claims**



1. A mold apparatus for liquid injection molding compositions comprising:

a frame having a forward and a rear end;

support plate means mounted on said frame and supporting a support post means, said plate means having a forward end and a rear end;

a mold frame means mounted on said support post means;

a conduit for liquid molding composition slidably mounted on the forward end of said frame and on the forward end of said mold frame means;

a first plate means having passage means therein for the passage of liquid molding composition and fixedly mounted on the forward end of said conduit and adapted to slide within said support post means and within said mold frame means and located adjacent said forward end of said frame;

nozzle means at the end of said pasage means in said first plate means adjacent the rear end of said mold frame means away from said conduit means, said nozzle means including pin means slidably mounted in said mold frame means and adapted to open and close a nozzle opening means in said nozzle means; and

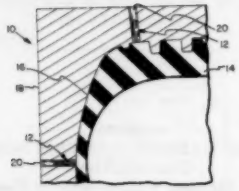
mold cavity means slidably mounted on said support post means and adapted to move toward and away from said nozzle means.

4,436,497

MOLD AND VENT PLUG THEREFOR

James M. Dahl, Stow; Bernard B. Jacobs; Joseph E. Lipovac, both of Akron; Ralph A. Meglen, Copley, and Donald W. Ward, Cuyahoga Falls, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 27, 1982, Ser. No. 437,094
Int. Cl.³ B29H 5/02
U.S. Cl. 425—28 R 16 Claims



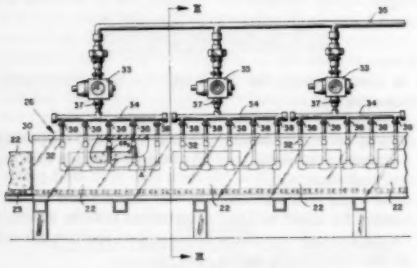
1. A vent plug for a mold used in forming elastomeric articles and the like comprising an elongated body having an axis and first and second axial ends, the overall length of said body measured parallel to said axis being greater than any external diameter of said body measured perpendicular to said axis, said body having at said first axial end a first external diameter which is constant over a predetermined portion of the length of said body equal to not more than 50 percent of said overall length, said body along the remainder of its length having an external diameter that is less than said first external diameter, and an opening extending through said body from said first axial end to said second axial end.

4,436,498

APPARATUS FOR CURING CONCRETE PRODUCTS

John A. Murray, Norristown, Pa., assignor to Conger/Murray Systems, Inc., Palm Beach, Fla.

Filed Feb. 1, 1982, Ser. No. 344,608
Int. Cl.³ B29C 25/00
U.S. Cl. 425—73 9 Claims



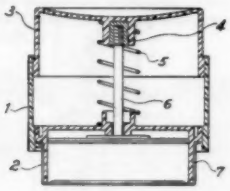
1. In an apparatus for the manufacture of concrete and like products having means for blending a desired mixture, means for molding the mixture to desired configurations, and for delivering the shapes thus formed for movement along a predetermined path, conveying means for moving the shapes thus formed to and through a chamber in which the shapes are exposed to carbon dioxide gas during the movement thereof through the chamber, the carbon dioxide gas being fed into the chamber at a controlled pressure, the improvement which comprises a series of spaced tube means along the top of the chamber, each of said tube means having a multiplicity of spaced orifices for feeding carbon dioxide gas into said chamber, said tube means and said orifices being spaced so as to permit water from carbonation and hydration reactions to escape from said shapes during feeding of said carbon dioxide gas.

4,436,499

HOUSEHOLD HAND-DEVICE FOR USE AS MEAT-PRESSER TO SHAPE MINCEMENT INTO STEAKS

Antonietta Ferrighi, Crusinallo, Italy, assignor to Acea Manodomestici S.r.l., Crusinallo, Italy

Filed Jul. 16, 1982, Ser. No. 398,961
Claims priority, application Italy, Jul. 20, 1981, 23027 A/81
Int. Cl.³ A22C 7/00; B29C 1/00
U.S. Cl. 425—195 7 Claims



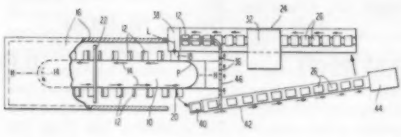
1. A hand operable device for use as a household meat presser, said device having a cylindrical central body within which a cylindrical handle member is slideably received, said handle member having a spring return means, a container member connected with said central body and having therein a plunger pressing means moveable by said handle and a cup member removeably connected with said central body and forming a bottom closure for said container member.

4,436,500

IN-LINE ROTATIONAL CASTING APPARATUS

Fred E. Allen; Bruce W. Thuener, both of Millville, and Peter R. Shadinger, Vineland, all of N.J., assignors to Wheaton Industries, Millville, N.J.

Filed Jan. 7, 1980, Ser. No. 109,798
Int. Cl.³ B29C 5/04
U.S. Cl. 425—290 27 Claims



1. Spin casting apparatus for molding hollow objects comprising:

a. loading conveyor adapted to receive at fixed intervals and to transport continuously a sucession of lower mold halves,

b. conveyor-synchronized fill dispenser including a dispenser head having at least one fill nozzle adapted to dispense a castable liquid adapted to form a hollow object by spin-casting into said lower mold halves in the course of the transporting thereof by said loading conveyor, said dispenser including means to lower said dispenser head from a starting position to a fill elevation position, to transport said head in said fill elevation position, in synchronization with said loading conveyor, to raise said dispenser head to a return elevation position, and to return said dispenser head in said return elevation position to said starting position, said dispenser including further means to dispense said fill liquid in said recepticle in the course of said synchronized movement.

c. loader for receiving sucessive mold assemblies comprising lower mold halves, castable liquid therein, and upper mold halves mated therewith and upper and lower mold half clamping means, from said loading conveyor and transferring said mold assemblies to successively presented traveling chucks, said loader including a dead plate onto which said mold assemblies are transferred by said conveyor, including a stop member to limit the travel of said mold assemblies and push bar loading means to push each of said mold assemblies perpendicularly with respect to said conveyor motion in timed sequence with said traveling chucks whereby each of said successively transferred mold assemblies is engaged to one of said successively presented chucks,

d. continuous spin caster comprising an elongated carrier means for said traveling chucks, said chucks being linearly spaced from one another along a horizontally disposed carrier means center line, further including means for continuously moving each of said chucks in a helical path about said carrier means center line, from a chuck loading position to a chuck unloading position at a predetermined rate such that the elapsed time for travel of a chuck from said loading position to said unloading position is not less than the time required for said casting material to harden in said mold, said spin caster further including means for continuously rotating each of said chucks about an axis radially projecting from said carrier means center line;

e. semi-automatic piercer adapted to form vent holes in all of molded objects disposed in said mold assemblies, said piercer comprising a tabletop adapted to receive a mold assembly with at least one perforation corresponding to the position of a molded object in said mold assembly and stop members adapted to receive and abut said mold assembly on three sides thereof, said piercer further including a manually activated swinging arm assembly having a piercing element disposed beneath

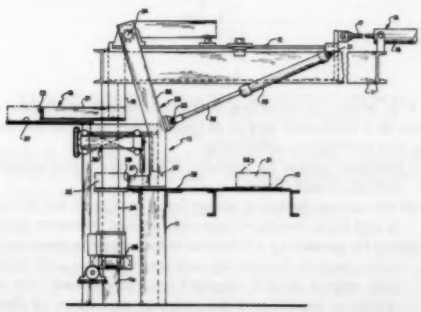
said tabletop perforation and adapted upon upward swinging thereof to protrude through said perforations and to pierce hollow molded objects disposed thereat.

4,436,501

APPARATUS FOR MAKING SPECIAL BRICK SHAPES

Samuel P. Kenworthy, Southern Pines, N.C., assignor to Basic Machinery Co., Inc., Siler City, N.C.

Filed Jul. 23, 1982, Ser. No. 401,103
Int. Cl.³ B29C *17/14*
U.S. Cl. 425—308 **7 Claims**



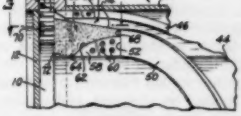
1. An apparatus for producing special brick shapes comprising conveyor means along which elongated slugs of green clay having an upper finish face and side edges are carried to a setting machine, a cutter frame adjacent to said conveyor means operable to cut slugs into special brick shapes, a pusher operable to push selected slugs off of said conveyor means to a location under said cutter frame, an elevator vertically movable between a first position below said frame in which slugs are positioned thereon by said pusher to an upper position above said frame to cause said cutter frame to cut said slugs into a plurality of shaped brick like articles, said pusher thereafter moving said articles from said elevator while said elevator remains in said second position.

4,436,502

AUGER FEED ARRANGEMENT FOR CUBING MACHINE

Garth C. Nelson, El Cajon; Henry J. White, La Jolla, and Gerald B. Nelson, San Diego, all of Calif., assignors to Papakube Corporation, San Diego, Calif.

Filed Sep. 30, 1982, Ser. No. 428,857
Int. Cl.³ B30B *9/28, 11/24*
U.S. Cl. 425—331 **9 Claims**



1. In a cubing machine having an annular die assembly, a circular die cavity formed about the inner periphery of said die assembly, and at least one press wheel adapted to be seated in said circular die cavity and arranged to be rotated therearound, an auger arrangement for supplying feed stock to said circular die cavity, including:

an outer housing;

an auger drum mounted concentrically within said housing and spaced therefrom, said housing and auger drum being arranged generally on the central axis of said annular die assembly to extend from one side of said circular die cavity, and said auger drum being rotatable relative to said housing and having the outer end thereof disposed in closely spaced relationship to said annular die cavity;

a rigid blade mounted on said auger drum and forming an auger flight, the outer end of said blade terminating short of the outer end of said auger drum;

a mounting plate carried on the outer end of said rigid blade and extending outwardly therefrom, the outer end of said mounting plate also terminating short of the outer end of said auger drum;

a clamping plate adapted to be mated with said mounting plate;

means for connecting said clamping plate with said mounting plate; and

a flexible, resilient tip arranged to be clamped at its lower, inner corner between said mounting plate and said clamping plate, said flexible, resilient tip extending at least to the outer end of said auger drum and having a height that is generally at least equal to the height of said rigid blade.

4,436,503

APPARATUS AND PROCESS FOR THE PRODUCTION OF PILE SURFACE ARTICLES

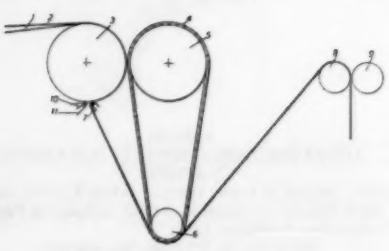
Donald J. Bye, Runcorn; Harold P. Stanistreet, Pontypool, both of England, and Werner Lindenstruth, Oestringen, Fed. Rep. of Germany, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 611,243, Sep. 8, 1975, which is a continuation of Ser. No. 417,597, Nov. 20, 1973, abandoned. This application Mar. 31, 1978, Ser. No. 892,023

Claims priority, application United Kingdom, Dec. 4, 1972, 55831/72

Int. Cl.³ B29C *17/02*

U.S. Cl. 425—384 6 Claims



1. Apparatus for manufacturing a pile surfaced product of the kind having a foundation layer and a pile of filament forming thermoplastic material thereon, said apparatus comprising a roll having a substantially smooth cylindrical surface heated to above the softening temperature of the thermoplastic, feed means for holding the front of the foundation layer against the thermoplastic material and the thermoplastic material against said heated surface so that the thermoplastic adheres to the surface and bonds to the backing, means to withdraw the laminate of the foundation layer and the thermoplastic from the heated surface so that filaments of softened thermoplastic material are formed by stringing said softened thermoplastic material between the foundation layer and the heated surface in a filament forming area, a rigid rod or bar of lesser diameter than the heated roll situated close to the heated surface and transverse to the direction of movement of the laminate without forming a nip with said roller, said rod or bar sharply parting the laminate from said roll, and jet means located at a position between the rod or rod and the point where the foundation parts from said roll for directing a stream of cooling fluid from the back of the foundation layer into the filament forming area.

4,436,504

APPARATUS FOR MONITORING EXHAUST GASES

Rolf Komma, Schulstrasse 43/1, D 7300 Esslingen 1 - Berkheim, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,237

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1981, 3117158

Int. Cl.³ F23N *5/24*

U.S. Cl. 431—15 6 Claims

1. Apparatus for monitoring exhaust gases from the combustion of fuel, particularly a heating system, comprising in combination:

a housing having an opening communicating with the exhaust gases;

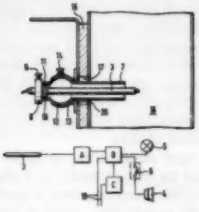
an elongated and interchangeable sensing probe in the housing extending through the opening;

probe mounting means within the housing to mount said probe selectively for swivel and longitudinal movement and locking position;

temperature indicating means responsive to signals from said probe for indicating the sensed condition;

signaling means responsive to signals from the probe for providing an audible and/or visual warning signal when the sensed condition reaches a first predetermined value;

interrupting means responsive to signals from the probe for automatically interrupting the combustion of fuel when



the sensed condition has reached a second predetermined value which exceeds said first value; and

an electric circuit including a voltage source and a plurality of relays for relaying signals from said probe to the indicating, signaling and interrupting means.

4,436,505

DEVICE FOR DETECTING FLAME IN OPEN-TYPE COMBUSTOR AND OXYGEN DENSITY OF INDOOR AIR

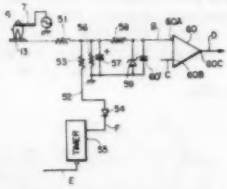
Hiroshi Yamaguchi, and Nobumasa Negishi, both of Gunma, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1981, Ser. No. 277,505

Claims priority, application Japan, Jul. 1, 1980, 55-89475

Int. Cl.³ F23N *5/24*

U.S. Cl. 431—76 8 Claims



1. A device for detecting both the presence or absence of flame in a combustor and an oxygen density of room air feeding said combustor, comprising:

a reference source for applying a reference signal across a portion of said flame;

an ion current detecting sensor for detecting an ion current in said flame produced as a result of said reference signal;

means for producing a detection output signal in response to an ion current detected by said sensor with a scale factor with respect to said detected ion current such that no erroneous detection of the presence or absence of flame occurs;

means for changing said scale factor a predetermined period of time after start of combustion of said flame to a value suitable for detecting an indoor oxygen density; and

means operating in response to said detection output signal for comparing said detection output signal with a fixed reference value for producing a final output signal sequentially indicative of the presence or absence of flame and said oxygen density.

4,436,506

CONTROL SYSTEM FOR A GAS HEATED WATER OR AIR HEATER

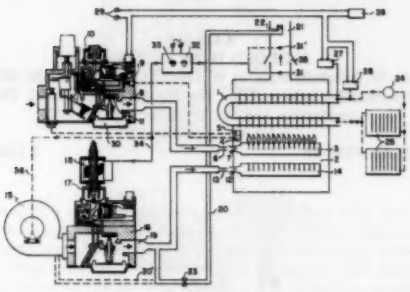
Hendrikus Berkhof, Emmen, Netherlands, assignor to Honeywell B.V., Amsterdam, Netherlands

Filed Apr. 14, 1982, Ser. No. 368,486

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1981, 3114954

Int. Cl.³ F23N 5/00

U.S. Cl. 431—76 4 Claims



1. Control system for a gas heated water or air heater having a gas control valve controlled by a temperature sensor and comprising a control member for the supply of combustion air which is controlled dependent on the gas flow, comprising a sensor for the content of oxygen or carbon dioxide in the flue gases is provided in the stack of the heater connected to an electric controller, the output signal of which controls the control member for the air volume, and further comprising a fan and a control valve connected in series with the fan and used as a controllable source of combustion air, wherein the control valve comprises a servo pressure regulator as well as a diaphragm operator for the control member of the control valve operated by the output pressure of the pressure regulator, and that a solenoid operator determining the set point of the pressure regulator is mounted on the servo pressure regulator and is controlled by the output signal of the electric controller.

4,436,507

FLUIDIZED BED REACTOR UTILIZING ZONAL FLUIDIZATION AND ANTI-MOUNDING AIR DISTRIBUTORS

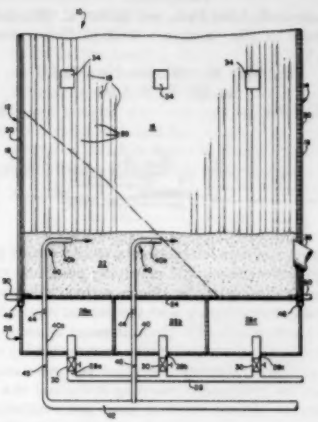
Robert D. Stewart, Verona, and Robert L. Gamble, Wayne, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Jul. 16, 1981, Ser. No. 283,864

Int. Cl.³ F23D 19/02

U.S. Cl. 431—170 3 Claims

1. A fluidized bed reactor comprising a housing, grate means supported in said housing, a bed of combustible particulate material supported on said grate means, means extending in said housing for supplying additional combustible particulate material to said bed of particulate material, an air plenum extending immediately below said grate means, said plenum being divided into a first chamber and at least two additional chambers, means for selectively passing air from said chambers through corresponding portions of said grate means and into corresponding portions of said bed extending above said chambers to selectively fluidize said bed portions, and an air distributor extending in each of the bed portions extending above said two additional chambers and directed towards the bed portion extending above said first chamber for selectively reducing the



build-up of particulate material in the bed portions extending above said two additional chambers.

4,436,508

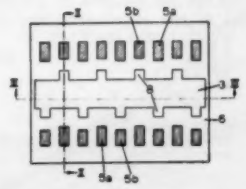
CERAMIC BURNER FOR GAS, PARTICULARLY FOR A HOT-BLAST STOVE FOR A BLAST FURNACE

Johannes C. van den Bemt, Schagen, Netherlands, assignor to Estel Hoogovens BV, Netherlands

Filed Apr. 6, 1982, Ser. No. 366,135

Int. Cl.³ C21B 9/00; F24H 7/00; F23C 5/00

U.S. Cl. 432—214 7 Claims



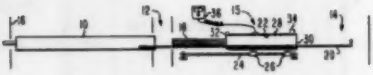
1. In a ceramic burner for use in combustion gas in a combustion chamber of a hot blast stove for a blast furnace plant having a burner tip defining a vertical gas conduit and vertical air conduits on the sides of the gas conduit exiting through ports into the gas conduit, the improvement comprising the tip defining a gas conduit of rectangular cross-section in plan view having portions of the longer sides flared outwardly at an exit end, said ports exiting in said flared portions, a plurality of spaced vertical recesses of lesser number than said ports on each longer side of said gas conduit and staggered with respect to the recesses on the other side, said recesses extending along said gas conduit in the flared portions to alternating ports of said air conduits.

4,436,509

CONTROLLED ENVIRONMENT FOR DIFFUSION FURNACE

Karl H. Kocmanek, Lake Park, and Robert C. Shambelan, Tequesta, both of Fla., assignors to RCA Corporation, New York, N.Y.

Filed May 10, 1982, Ser. No. 376,572
Int. Cl.³ F27D *5/00*
U.S. Cl. 432—253 **5 Claims**



1. In a furnace system for processing silicon wafers having a cabinet region for storing and supplying gases and reactants used in the processing of the silicon wafers, a furnace zone abutting and communicating with the cabinet region having a refractory reaction tube of a given diameter extending therethrough, one end of the reaction tube communicating with the cabinet region for receiving the gases and reactants under pressure and the other end terminating in one end of a scavenger chamber to exhaust residual gases and reactants and a loading-unloading chamber abutting the other end of the scavenger chamber whereby boat members loaded with silicon wafers may be handled seriatum through the loading-unloading chamber, through the scavenger chamber and into the reaction tube, the improvement comprising:

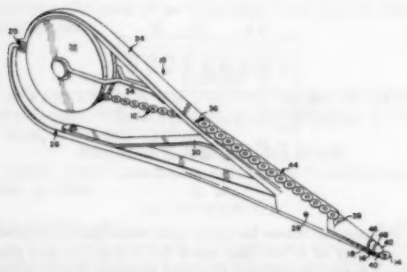
a movable control member mounted for linear movement within the reaction tube, the scavenger and loading-unloading chambers along an extension of the longitudinal axis of the reaction tube and comprising an inner tube having the same diameter as the reaction tube and an outer tube concentric with and spaced from the inner tube, both tubes fixed for parallel and simultaneous movement in the same direction.

4,436,510

ORTHODONTIC CHAIN APPLICATION TOOL

Paul E. Klein, Lake Oswego, Oreg., assignor to Modcom, Inc., Canby, Oreg.

Filed Aug. 25, 1982, Ser. No. 411,496
Int. Cl.³ A61C *3/00*
U.S. Cl. 433—4 **2 Claims**



1. An applicator tool for use with an orthodontic loop chain to facilitate attaching, through the use of individual loops in the chain, an orthodontic archwire to orthodontic tooth appliances, where the chain is composed of a series of elastically deformable loops connected by breakaway isthmuses, said tool comprising

a pair of pivotally connected arms,

a pair of loop-gripping tips adapted for clamping an end loop in the chain in a manner permitting the end loop to be placed on a tooth appliance, to secure an archwire thereto,

a chain dispenser mounted on one of the arms, adjacent the other end thereof,

means defining a path along which the chain is intended to be advanced in a forward direction from said chain dispenser toward said tips, and

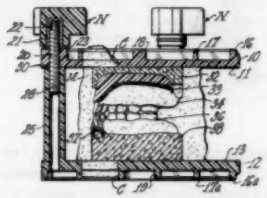
means elastically encircling said tips forming a constriction zone in said path through which an end-adjacent loop in the chain is adapted to pass, by reversible loop elongation produced by the application of a downstream force on the chain which is substantially less than that required to break an isthmus in the chain.

4,436,511

MOLDED DENTAL PRESS

John W. Mitchell, Sr., 1701 W. 168th St., Gardena, Calif. 90247

Continuation-in-part of Ser. No. 384,183, Jun. 2, 1982. This application Aug. 26, 1982, Ser. No. 411,675
Int. Cl.³ A61C *19/00*
U.S. Cl. 433—49 **5 Claims**



2. A dental press for tensioned holding during a curing period of a workpiece such as a body of moldable material adhesively supporting a matching pair of dentures and corresponding oral models, at least one of which dentures bears curable relining material conformably held intermediate the denture and its model, said press comprising in combination:

an open frame formed of separate upper and lower work-contact surfaces, each having an obverse planar face disposed facing each other, mutually parallel and vertically spaced apart by upstanding support means, tensioning means carried by said support means for frictional registration with said upper contact surface for clamping said workpiece in said frame between and in frictional contact with the respective work-contact surfaces, said upper work-contact surface having a reverse face formed with a pattern of upstanding, axially-outward directed, generally diametric ribs plus a peripheral ring which ring together with the diametric ribs form multiple spill-over catch basins, said upper work-contact surface being formed with at least one transverse aperture connecting its obverse and reverse faces and opening to one of said basins so as to enable passage thereto of small amounts of said moldable material which may be thus extruded from said workpiece upon initial pressure of the obverse faces thereagainst when the workpiece is disposed therebetween.

4,436,512

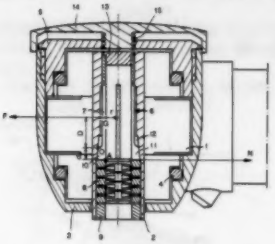
DEVICE FOR FIXING DRILL BITS INTO THE HEAD OF AIR MOTORS FOR HAND-HELD DENTISTS' TOOLS

Philippe Garcia, Besancon, France, assignor to Micro-Mega S.A., Besancon, France

Filed Nov. 18, 1981, Ser. No. 322,411
Claims priority, application France, Dec. 22, 1980, 80 27642; Feb. 10, 1981, 81 02734; Feb. 10, 1981, 81 02735
Int. Cl.³ A61C *1/14*
U.S. Cl. 433—129 **12 Claims**

1. Device for securing a drill bit into the head of an air motor driven dental drill of the type including a housing mounting a rotor having a collet means for receiving the shank of the drill bit and a bit retention means to secure the bit in the collet

means, the improvement wherein the retention means (6) includes longitudinal slits (7) and a head portion (10) having an inclined surface (11), the collet means of the rotor (2) having an inclined surface (12) corresponding to said inclined surface (11), a biasing means acting at one end of the retention means (6) to close the head portion (10) of the retention means onto the shank of the drill bit using the cooperation of inclined



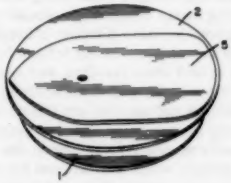
surface (11) and corresponding inclined surface (12), and a release means to release the shank of the drill bit by compressing the biasing means, said release means comprising a button (14) fitted over the housing and a closure member (13) rigidly fixed at one end of the retention means (6), wherein a turning of said button (14) causes displacement of said closure member (13).

4,436,513

FREE-SAIL SYSTEM SAILBOARD SIMULATOR

Kenneth S. Darby, R.D. 1, Box 311, Falls, Pa. 18615

Filed Apr. 5, 1982, Ser. No. 365,451
Int. Cl.³ G09B 9/06
U.S. Cl. 434—60 **1 Claim**



1. An improvement in the design of a simulator to be used to instruct sailing on a free-sail system sailboard consisting of two complete discs of plywood or other material to form a base and a deck, having a hull-shaped non-skid area on the upper disc and within the diameter of the upper disc, having a swivel joint mount on the hull area, and inverted casters mounted on the lower disc with a pivoting bearing in the center acting as an axis around which the upper disc rotates and having an adjustable dampener for regulating the ease at which a simulator rotates and a cylindrical shape guard protruding down from the upper disc to keep fingers away from the casters.

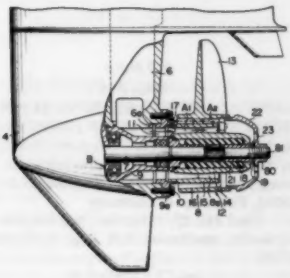
4,436,514

EXHAUST MEANS FOR MARINE PROPULSION UNIT

Masanori Takahashi, Hamamatsu, and Hidehiko Uehara, Shizuoka, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 15, 1981, Ser. No. 302,372
Claims priority, application Japan, Sep. 16, 1980, 55-128377
Int. Cl.³ B63H 1/14
U.S. Cl. 440—89 **5 Claims**

1. A marine propulsion unit comprising housing means which is formed with engine exhaust gas passage means and has a lower portion supporting propeller shaft means, propeller means mounted on said propeller shaft means and including hub means and blade means, said hub means being formed with exhaust passage means which is extending axially along the hub means and connected at one end with said exhaust gas passage means in the housing means, the other end of the exhaust passage means being opened rearwardly of the hub means, outer pipe means having a front portion radially spaced apart from and integral with said hub means and extending substantially parallel with said hub means to surround at least the rear portion of said hub means to thereby form a substantially straight passage between the front portion of the outer



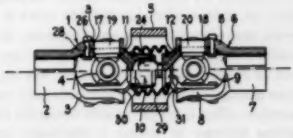
pipe means and the hub means, said outer pipe means further having a rear portion fitted to a rear end of the front portion and means extending rearwardly beyond said other end of the exhaust passage means in the hub means, said rear portion of the outer pipe means having a rear wall formed with opening means which is smaller in diameter than the rear end of said hub means, said rear wall of the rear portion of the outer pipe means having an internally threaded central hole which is in threadable engagement with an externally threaded rear end portion of said propeller shaft means, and said outer pipe means having a front end which is located forwardly of trailing edge of said blade means.

4,436,515

ARTICULATION DEVICE HAVING A DOUBLE UNIVERSAL JOINT AND A BALL JOINT UNIT

Bernard Mallet, Limay, France, assignor to Nadella, Rueil Malmaison, France

Filed Sep. 23, 1982, Ser. No. 421,802
Claims priority, application France, Oct. 23, 1981, 81 19926
Int. Cl.³ F16D 3/26, 3/30
U.S. Cl. 464—114 **9 Claims**



1. An articulation device comprising two universal joints, intermediate connecting means for interconnecting the two universal joints, and a ball joint unit, said device being provided for transmitting a movement of rotation between a driving shaft and a driven shaft which are adapted to be rendered rigid respectively with a fork member of a first of said universal joints and a fork member of a second of said universal joints, the ball joint unit comprising a first element and a second element respectively carried by said two fork members, spiders, rolling bearings connecting said two fork members to said intermediate connecting means through said spiders, each of

the elements of the ball joint unit being constructed in the form of a fork member having branches which are respectively engaged between and in contact with branches of the corresponding fork member of said first and second universal joints, the fork members of the ball joint unit each having a web which carries a projection which cooperates with a complementary projection provided on the web of the other fork member of the ball joint unit, the fork members of the ball joint unit defining in their branches transverse apertures receiving inwardly projecting portions of said rolling bearings by means of which rolling bearings the spiders are mounted in the branches of the fork members of the first and second universal joints.

4,436,516

CYLINDRICAL ROLLER BEARING SUPPORT FOR TRUNNIONS IN FORK EYES OF UNIVERSAL JOINTS

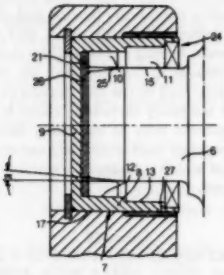
Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eussenheim, and Heinrich Kunkel, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 17, 1981, Ser. No. 284,191

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1980, 3027263

Int. Cl.³ F16D *3/41*

U.S. Cl. 464—128 **8 Claims**



1. Support means for trunnions in fork eyes of universal joints having a cylindrical bore comprising a bearing bushing mounted in the cylindrical bore and consisting of a generally cylindrical sleeve section and a bottom section closing one axial end of said sleeve section adapted to axially support the trunnion, a plurality of cylindrical rollers having axial end faces arranged in at least two side by side rows in an annular space between said sleeve section and trunnion, said trunnion having an outer peripheral surface defining the inner raceways for the rows of rollers, said sleeve section having a constant uniform outer diameter and having stepped outer races formed in its bore section offset in steps radially inwardly towards said bottom section thereby to define a relatively thick walled sleeve section for a first row of rollers adjacent the bottom section and a relatively thin walled sleeve section for the rollers of a second row which are greater in diameter than said rollers of said first row, said sleeve section under the outer races being supported non-elastically at its outer peripheral surface adjacent the bottom section over its entire periphery and being supported elastically on its side opposite the bottom section at least in a radial load direction in the fork eye by means of an intermediate bushing member made of an elastically compressible material which seats between the inner wall of the bore of the fork eye and the outer peripheral surface of the bearing bushing and overlies said second row of rollers.

4,436,517

APPARATUS FOR MAKING TRANSVERSE FLOW CIGARETTE FILTERS

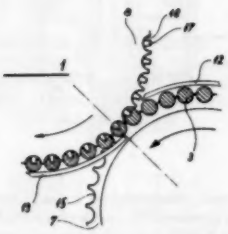
Jean-Pierre Lebet, Montreux, Switzerland, assignor to Baumgartner Papiers S.A., Renens, Switzerland

Continuation-in-part of Ser. No. 839,607, Oct. 5, 1977, Pat. No. 4,164,438. This application Mar. 14, 1979, Ser. No. 20,471

Claims priority, application Switzerland, Oct. 5, 1976, 12568/76

Int. Cl.³ A24C *5/50*

U.S. Cl. 493—45 **11 Claims**



1. Apparatus for making transverse flow cigarette filters which comprises:

means for forming cellulose acetate previously impregnated with a plasticizing agent into a rod having a porous covering:

means for cutting said rod at a cutting station into sections each having a length of several filters;

means for conveying said rod sections from said cutting station in a direction transverse to the lengths of said rod sections; and

means engaging opposite ends of said rod sections for positioning said rod sections while being thus conveyed,

said conveying means comprising a revolving drum having in its peripheral surface a plurality of longitudinal grooves into which said rod sections are fed and by which they are conveyed as said drum revolves, and a second revolving drum having in its peripheral surface longitudinal grooves into which said rod sections are transferred, said second drum having in its groove spaced projections for forming longitudinally spaced indentations in one side of each of said rod sections while said sections are being conveyed by said conveying means from said cutting station.

4,436,518

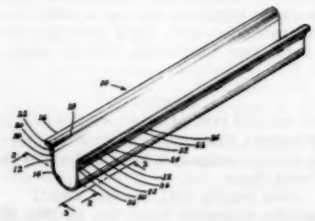
METAL TROUGH

David L. Buss, 120 E. Kraus St., St. Louis, Mo. 63111

Filed Sep. 15, 1980, Ser. No. 186,899

Int. Cl.³ B65G *15/60*

U.S. Cl. 428—595 **5 Claims**



1. A trough comprising a length of sheet metal formed into a trough having flanges along each side of the trough with a smooth continuous curve between the flanges and the body of

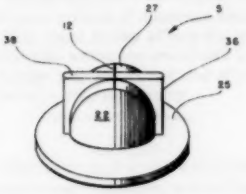
the trough, and a bar of metal welded along the underside of each longitudinal edge of said metal sheet before said flanges are formed; said bar being formed simultaneously with said sheet, so as to produce a flange reinforcement having a smooth continuous curve, which curve is substantially identical to the smooth continuous curve of the flanges on the trough.

4,436,519

REMOVABLE HEMOSTASIS VALVE

William J. O'Neill, Garland, Tex., assignor to Argon Medical Corp., Athens, Tex.

Filed May 28, 1981, Ser. No. 267,984
Int. Cl.³ A61M 5/00
U.S. Cl. 604—175 **10 Claims**



1. A hemostasis valve comprising:
(a) a body having a central passage therein;
(b) a seal having a central aperture therein, said seal being mounted in said central passage; and
(c) a resilient, dome shaped diaphragm having a wall member with a single, linear slit therein, said diaphragm being mounted in said central passage, said diaphragm wall member having an inner bottom diaphragm surface, and an outer bottom diaphragm surface, said slit extending through said wall member from said inner bottom diaphragm surface to said outer bottom diaphragm surface, said wall member defining with said seal a diaphragm chamber within the space between said inner bottom diaphragm surface and said seal, whereby the side walls of said dome shaped diaphragm will act in cooperation with the walls of said central passage to resiliently urge said slit closed when no catheter is present therethrough.

4,436,520

LOW GLOSS FILMS OF ENHANCED ADHESION

Robert J. Lipko, Llewellyn, and Douglas J. Laurent, Auburn, both of Pa., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 21, 1981, Ser. No. 332,367
Int. Cl.³ A61F 13/02
U.S. Cl. 604—385 **3 Claims**

1. A disposable diaper having a diaper back sheet of polyolefin, non-woven top sheet, absorbent inner layer and tape closure tabs, wherein the exposed surface of said diaper back sheet has a 45° gloss of no greater than 8, a mean value of maximum profile height (R_{pm}) of less than 100 microinches and a mean maximum peak to valley height (R_{tm}) of less than 200 microinches, wherein said surface has enhanced adhesion to said tape closure tabs.

4,436,521
PROCESS FOR PRODUCING DYED AND ANTI-SHRINK TREATED WOOL

Oskar Annen, Aesch; Hermann Egli, Basel, and Karl Zesiger, Allschwil, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 178,124, Aug. 14, 1980, abandoned, which is a continuation of Ser. No. 103,272, Dec. 13, 1979, abandoned. This application May 27, 1982, Ser. No. 382,681

Claims priority, application Switzerland, Oct. 18, 1979, 9366/79

Int. Cl.³ D06P *1/56, 3/16, 5/00, 5/02*

U.S. Cl. 8—493 **29 Claims**

1. A process for producing dyed and anti-shrink treated wool which comprises dyeing wool with an acid milling or a metal complex dye either before, after or between the steps of an anti-shrink treatment and after-treating the dyed wool with a liquor containing a mixture of a cationic fixing agent and a levelling/retarding agent having affinity for wool dyestuffs, with the proviso that where the anti-shrink treatment comprises a chlorination step the dyeing and aftertreatment are carried out after such chlorination step.

4,436,522
DISPERSE DYE COMPOSITION

Toshio Niwa, and Susumu Nagashima, both of Kanagawa, Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Dec. 31, 1981, Ser. No. 336,482

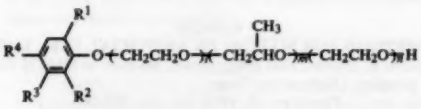
Int. Cl.³ C09B *67/38, 67/40;* **D06P** *1/613*

U.S. Cl. 8—524 **2 Claims**

1. A disperse dye composition containing:

20 to 50% by weight of a water-insoluble or sparingly soluble dye; and

1 to 5% by weight of a water-soluble surface active agent represented by the formula:



wherein R_1 is a hydrogen atom or an α-methylbenzyl group, R^2 is a hydrogen atom or an α-methylbenzyl group, R^3 is a hydrogen atom or a methyl group, R^4 is a hydrogen atom, a methyl group or an α-methylbenzyl group, with the proviso that one of R^1, R^2 and R^4 is an α-methylbenzyl group, wherein one of l and n is 0 and the other is an integer of 7 to 20, and m is an integer of 0 to 5.

4,436,523
PROCESS FOR THE PREPARATION OF STORAGE STABLE COLORANT COMPOSITIONS BY ULTRAFILTRATION AND WET MILLING

Paul Hugelshofer, Muttenz; Peter Zbinden, Hölstein, and Zdenek Koci, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 20, 1982, Ser. No. 419,660

Claims priority, application Switzerland, Sep. 29, 1981, 6258/81

Int. Cl.³ C09B *67/46;* **D06P** *1/16*

U.S. Cl. 8—527 **20 Claims**

1. A process for the preparation of storage stable compositions of sparingly soluble or water-insoluble colorants, which process comprises mixing an aqueous suspension of at least one sparingly soluble or water-insoluble colorant with at least one surface-active substance, subjecting the mixture to ultrafiltration through an asymmetrical membrane which contains ionic groups and has a pore diameter of 1 to 500 Å and a cut-off level in the molecular weight range from 300 to 500, and subsequently subjecting the resultant concentrate to wet grinding.

4,436,524
AFTER TREATING COMPOSITION FOR DIRECT OR REACTIVE DYEINGS ON CELLULOSE

Salvatore Valenti, Binningen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed May 10, 1982, Ser. No. 376,902

Claims priority, application Fed. Rep. of Germany, May 16, 1981, 3119645; Jun. 19, 1981, 3124195

Int. Cl.³ D06P *5/02*

U.S. Cl. 8—551 **23 Claims**

1. A composition useful as an aftertreatment agent for improving the fastness of a dyeing, printing or optical brightening on a hydroxy group-containing fibrous substrate which composition comprises

(1) a mixture of (A) and (C),

(2) a mixture of (A), (B) and (C),

(3) a precondensate prepared by reacting (A) with (B) in the presence of (C), or

(4) a mixture of (C) and a precondensate prepared by reacting (A) with (B) in the absence of (C),

wherein

(A) is a linear or crosslinked polymer comprising repeating units of the formula I″ or I‴,

(B) is an N-methylol derivative of a urea, melamine, guanamine, triazinone, urone, carbamate or acid amide;

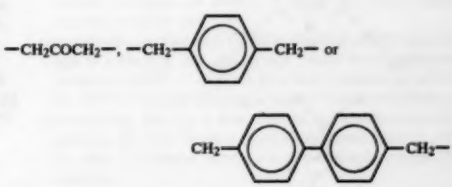
and

(C) is a catalyst for the cross-linking of N-methylol compounds of the type (B) above,

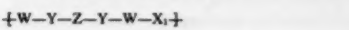
with the proviso that in the composition of type (1) component (A) comprises repeating units of formula I‴, said formulae I″ and I‴ being as follows:

I″

wherein X_1' is C_{2-12}alkylene,



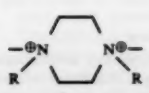
and each y, independently, is 2–4, and



I‴

in which each W independently is

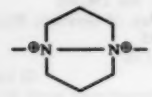
(a)



(b)

-continued

(c)


(d)

in which each

R, independently, is C_{5-6}cycloalkyl; C_{1-20}alkyl; C_{1-20}alkyl monosubstituted by —OH, —CN, R_1O—R_1S—, R_1CO—, or —$CON(R_2)_2$; C_{1-4}alkyl monosubstituted by —COOH or arylsulphonyl or mono- or di-substituted by —$COOR_1$; phenyl or benzyl unsubstituted or substituted by up to 3 groups selected from R_1—, R_1O—, —OH, —CN, halogen and —COOH; or both groups R on a single nitrogen atom, together with the nitrogen atom to which they are attached, form a 5- or 6-membered ring;

R_1 is C_{1-4}alkyl;

R_2 is hydrogen, C_{1-4}alkyl or C_{1-4}alkyl monosubstituted by —OH, aryl or C_{1-4}alkoxy;

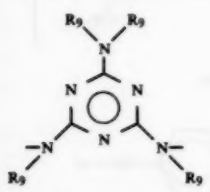
X_1 is a divalent bridging group,

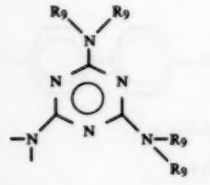
each

Y, independently, is arylene, aralkylene, alkarylene, oxyarylene or C_{1-15}alkylene, which may be interrupted by up to 7 oxygen or 3 quaternary nitrogen atoms and may be substituted by up to 3 —OH or —OR_1 groups,

and

Z is a bridging group of formula (e) or (f)


(e)


(f)

in which

R_5 is a direct bond, C_{1-12}alkylene, C_{1-12}alkylene interrupted by up to 3 N or O atoms, arylene, diaminoarylene or dioxyarylene,

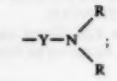
R_6 is C_{1-12}alkylene or C_{2-12}alkylene interrupted by up to 3 N, O or S atoms,

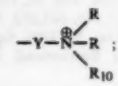
R_7 is arylene,

R_8 is C_{1-12}alkylene or arylene,

and each

R_9 independently is hydrogen, C_{1-20}alkyl, unsubstituted or substituted by up to 3 hydroxy, C_{1-4}alkoxy or halogen groups,

a group  ;

or a group  ;

in which Y and R are as defined above and R_{10} is C_{1-20}alkyl which may be unsubstituted or substituted by up to 3 hydroxy or halogen groups and/or may be interrupted by up to 3 —O—, —S—, —NR_{11}— or —$N^{\oplus}(R_1)_2$— groups, where R_{11} is hydrogen or C_{1-4}alkyl.

4,436,525

FUEL GEL FOR CHARCOAL OR WOOD FIRES

Barney J. Zmoda, Bridgewater, and Paul J. Fessock, South Plainfield, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 16, 1983, Ser. No. 475,818
Int. Cl.³ C10L *7/04*
U.S. Cl. 44—7.3 **7 Claims**

1. A solid alcohol fuel fire starter comprising a firm, free-standing molded solid anhydrous alcohol gel which does not liquify during combustion consisting essentially of a major proportion of an anhydrous alcoholic mixture of methanol and isopropanol in the weight ratio of about 3:1, and a fatty acid soap gelling agent.

4,436,526

METHOD FOR MAKING AN ARTIFICIAL FUEL LOG

Morris E. Holder, East Ridge, Tenn., assignor to HMVH Corporation, Chattanooga, Tenn.

Filed Jun. 25, 1982, Ser. No. 392,287
Int. Cl.³ C10L *5/00*
U.S. Cl. 44—10 B **14 Claims**

1. A method for making an artificial fuel log comprising:
(a) providing a mixture of combustible material and binder in a hollow mold which is open at both ends;
(b) applying compressive forces having both axial and radial components at both ends of the mold to compress the mixture in the mold;
(c) closing both ends of the mold to maintain the compressed mixture therein at a fixed volume;
(d) effecting at least partial curing of the compressed mixture within the mold;
(e) removing the closures from the ends of the mold; and
(f) removing the fuel log from the mold.

4. The method of claim 1 wherein the combustible material is lignocellulosic material having a moisture content of 18% by weight or less, and the binder is a thermosetting resin.

12. An artificial fuel log made by the method comprising:
(a) providing a mixture of combustible material and binder in a hollow mold which is open at both ends;
(b) applying compressive forces having both axial and radial components at both ends of the mold to compress the mixture in the mold;
(c) closing both ends of the mold to maintain the compressed mixture therein at a fixed volume;
(d) effecting at least partial curing of the compressed mixture within the mold;
(e) removing the closures from the ends of the mold; and
(f) removing the fuel log from the mold.

4,436,527

STABILIZER FOR MIXED FUELS

Masaaki Yamamura, Wakayama; Taizo Igarashi, Amagasaki, and Toshiyuki Ukigai, Chiba, all of Japan, assignors to Kao Soap Co., Ltd.; Lion Corporation and Nippon Oil and Fats Co., Ltd., all of Tokyo, Japan

Filed Sep. 10, 1981, Ser. No. 300,855
Claims priority, application Japan, Sep. 16, 1980, 55/128087
Int. Cl.³ C10L 1/32
U.S. Cl. 44—51 10 Claims

1. A mixed fuel composition which comprises a dispersion of pulverized coal dispersed in fuel oil, said dispersion containing an effective stabilizing amount of the reaction product obtained by reacting (1) polyol having at least 3 hydroxyl groups in the molecule and having a molecular weight of from 400 to 10,000, with (2) an epihalohydrin.

4,436,528

AQUEOUS SLURRIES OF CARBONACEOUS MATERIALS

Martin J. Schick, New York, N.Y., and Kathy A. Knitter, Newark, Calif., assignors to Diamond Shamrock Chemicals Company, Dallas, Tex.

Filed Sep. 17, 1982, Ser. No. 419,618
Int. Cl.³ C10L 1/32
U.S. Cl. 44—51 23 Claims

1. A stabilizer composition for aqueous carbonaceous slurries comprising:

(a) at least one dispersant selected from the group consisting of the sodium, lithium, potassium and ammonium salts of naphthalenesulfonic acid formaldehyde condensate, and

(b) at least one water soluble polymer selected from the group consisting of sodium alginate, guar gum, locust bean gum, carboxymethylhydroxypropyl guar gum, hydroxypropyl guar gum and guarpak guar gum.

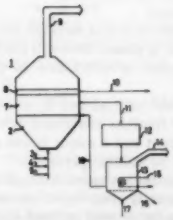
21. A process for preparing stable aqueous carbonaceous slurries comprising incorporating into said slurry the composition of claim 1 in an amount sufficient to reduced water content of the slurry, stabilize the network of carbonaceous material in water and improve pumpability.

4,436,529

METHOD FOR REMOVING SULPHUR IN CONJUNCTION WITH THE GASIFICATION OF CARBONACEOUS MATERIAL IN METAL SMELTS

Per A. H. H. Fahlström, Åkersberga, and Karl G. Görling, Lidingö, both of Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Filed Mar. 11, 1982, Ser. No. 357,091
Claims priority, application Sweden, Apr. 21, 1981, 8102508
Int. Cl.³ C10J 3/00
U.S. Cl. 48—197 R 8 Claims



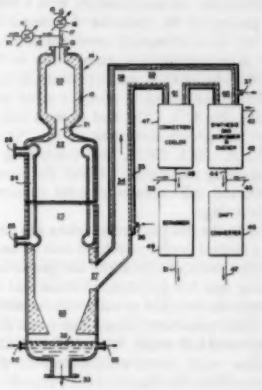
1. A method for removing sulphur when gasifying metal smelts of carbonaceous material containing sulphur, characterized in that the carbonaceous material is charged to a gasifying reactor containing an iron and/or manganese smelt with a temperature of between 1100° and 1600° C. substantially saturated with respect to sulphur and carbon to form a smelt layer, a matte layer and a slag layer; and tapping off the matte layer separated from residual mineral material which is removed with slag from said slag layer.

4,436,530

PROCESS FOR GASIFYING SOLID CARBON CONTAINING MATERIALS

Edward T. Child, Tarrytown, and William B. Crouch, Chappaqua, both of N.Y., assignors to Texaco Development Corporation, White Plains, N.Y.

Filed Jul. 2, 1982, Ser. No. 394,974
Int. Cl.³ C10J 3/46
U.S. Cl. 48—197 R 17 Claims



1. The method which comprises

gasifying a solid carbon-containing charge in the presence of water and an oxygen-containing gas thereby forming a hot synthesis gas containing carbon monoxide and hydrogen at 1100° C.–1600° C.;

cooling by radiation said hot synthesis gas containing carbon monoxide and hydrogen to 500° C.–800° C. thereby forming a cooled synthesis gas;

removing at least a portion of the ash components from said cooled synthesis gas thereby forming a partially deashed cooled synthesis gas;

convectively cooling said partially deashed cooled synthesis gas in a transfer line convection cooler from initial temperature of 500° C.–800° C. to a final temperature of 400° C.–700° C. thereby forming a further cooled synthesis gas;

convectively cooling a first, carbon monoxide-production portion of said further cooled synthesis gas to 150° C.–400° C. thereby forming a convectively cooled first portion;

scrubbing said convectively cooled first portion thereby forming a scrubbed first portion of said synthesis gas in amount desired for carbon monoxide production;

contacting a second portion of said cooled synthesis gas with aqueous coolant in a synthesis gas scrubbing and quench operation wherein, as said gas is cooled from 400° C.–700° C. down to 150° C.–250° C., it volatilizes therein water in predetermined desired amount for shift conversion thereby forming a shift conversion charge gas;

preheating said shift conversion charge gas to 175° C.–250° C.;

passing said preheated shift conversion charge gas to a shift conversion operation wherein at 250° C.–550° C. and 300–1200 psig water reacts with carbon monoxide forming carbon dioxide and hydrogen to yield a product synthesis gas; and

withdrawing said product synthesis gas.

4,436,531

SYNTHESIS GAS FROM SLURRIES OF SOLID CARBONACEOUS FUELS

Lawrence E. Estabrook, Whittier, Calif., and Robert M. Suggitt, Wappingers Falls, N.Y., assignors to Texaco Development Corporation, White Plains, N.Y.

Filed Aug. 27, 1982, Ser. No. 412,437
Int. Cl.³ C10J 3/46
U.S. Cl. 48—197 R **28 Claims**

1. A continuous process for the production of synthesis gas, fuel gas, or reducing gas from a slurry of an ash-containing solid carbonaceous fuel comprising,

(1) reacting about 75 to 95 weight percent of the carbon in said slurry of ash-containing solid carbonaceous fuel by noncatalytic partial oxidation with a free-oxygen containing gas and in the presence of a temperature moderator in the free-flow refractory lined reaction zone of a gas generator at an autogenous temperature in the range of about 2350° F. to 2900° F. and a pressure in a range of about 10 to 200 atmospheres to produce a hot stream of gas comprising H_2, CO, CO_2, and at least one material selected from the group consisting of H_2, N_2, H_2S, COS, CH_4, NH_3, A, HCl, HCN, and containing entrained matter comprising particulate carbon, the remainder of the unconverted ash-containing solid carbonaceous fuel, and molten slag;

(2) passing the hot gas stream into a gas cooling zone including a radiant cooler provided with an unobstructed central passage through which the hot gas stream is passed; contacting said hot gas stream within said cooling zone with an aqueous solution of catalyst consisting of a water soluble alkali metal compound and/or an alkaline earth metal compound and water, wherein the alkali metal and/or the alkaline earth metal constituents of the compound are selected from the metals in the Periodic Table of Elements in Groups IA and/or IIA; and intimately mixing said catalyst solution with said entrained matter and vaporizing the water;

(3) reacting in said gas cooling zone in the presence of said catalyst H_2O and at least a portion of the particulate carbon and the carbon in the remainder of the unconverted ash-containing solid carbonaceous fuel entrained in said gas stream; and simultaneously reducing the temperature of said gas stream from an entering temperature in the range of about 2300° F. - 2800° F. to a discharge temperature in the range of about 1350° F. - 1600° F. by indirect heat exchange with a coolant; and

(4) discharging from said gas cooling zone a partially cooled gas stream containing an increased amount of H_2+CO_x.

4,436,532

PROCESS FOR CONVERTING SOLID WASTES TO GASES FOR USE AS A TOWN GAS

Katsunobu Yamaguchi, Yokohama; Seiichi Matsuoka, Anjyo; Takayuki Hayashida, and Tomio Hayase, both of Yokohama, all of Japan, assignors to JGC Corporation and Tsukishima Kikai Co., Ltd., both of Tokyo, Japan, a part interest

Filed Mar. 9, 1982, Ser. No. 356,606
Claims priority, application Japan, Mar. 13, 1981, 56-35303
Int. Cl.³ C10J 3/00
U.S. Cl. 48—209 **14 Claims**

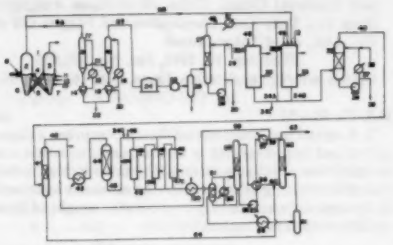
1. A process for converting solid wastes to gases suitable for use as a town gas comprising the steps of:

(1) pyrolyzing solid wastes at a temperature of at least 550° C. in a pyrolyzing furnace to produce pyrolysis gases containing hydrogen, carbon monoxide, carbonic acid gas, methane and other hydrocarbons, inert gases, chlorine-containing compounds, sulfur-containing compounds and other impurities,

(2) washing the thus produced pyrolysis gases,

(3) refining the thus washed pyrolysis gases,

(4) reforming the thus refined pyrolysis gases with the steam contained therein by at least one member selected from low-temperature steam reforming, high-temperature steam reforming, CO conversion and methanation and



(5) separating at least one member selected from the steam and carbonic acid gas from the thus reformed pyrolysis gases thereby to obtain the gases suitable for use as a town gas.

4,436,533

ADSORPTION PROCESS

Robert P. Bannon, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 2, 1982, Ser. No. 446,299
Int. Cl.³ B01D 53/04
U.S. Cl. 55—26 **8 Claims**

1. A improved process for using at least three molecular sieve adsorbent beds and a continuous flow of a vapor-phase eluent to effect the resolution of a continuous flow of a vapor-phase hydrocarbon feed mixture containing normal paraffins and non-normal paraffin hydrocarbons into an adsorbate product fraction comprising normal paraffins and a raffinate product fraction comprising non-normal paraffin hydrocarbons, which process comprises repeated sequential performance of the following steps: step one, in which

the feed mixture is passed through a first adsorbent bed,

effluent is withdrawn from the first bed and passed through a second adsorbent bed,

the eluent flow is passed through a third adsorbent bed,

adsorbate product is withdrawn as an effluent from the third bed, and

raffinate product is withdrawn as an effluent from the second bed;

step two, in which

the feed mixture is passed through the second bed,

the eluent flow is passed through the first bed,

effluent from the first bed is withdrawn and is passed through the third bed, and

raffinate product is withdrawn as effluent from the second bed and from the third bed;

step three, in which

the feed mixture is passed through the second bed,

the eluent flow is passed through the first bed,

adsorbate product is withdrawn as effluent from the first bed,

effluent from the second bed is withdrawn and is divided into a major fraction containing between about 50 and 95 volume percent and a minor fraction containing between about 5 and 50 volume percent,

said minor fraction is passed through the third bed, and

raffinate product is withdrawn as said major fraction of effluent from the second bed and as effluent from the third bed;

step four, in which

the feed mixture is passed through the second bed,

effluent is withdrawn from the second bed and passed through the third bed,

the eluent flow is passed through the first bed,

adsorbate product is withdrawn as effluent from the first bed, and

raffinate product is withdrawn as effluent from the third bed,

step five, in which

the feed mixture is passed through the third bed,

the eluent flow is passed through the second bed,

effluent from the second bed is withdrawn and is passed through the first bed, and

raffinate product is withdrawn as effluent from the first bed and from the third bed;

step six, in which

the feed mixture is passed through the third bed,

the eluent flow is passed through the second bed,

adsorbate product is withdrawn as effluent from the second bed,

effluent from the third bed is withdrawn and is divided into a major fraction containing between about 50 and 95 volume percent and a minor fraction containing between about 5 and 50 volume percent,

said minor fraction is passed through the first bed, and

raffinate product is withdrawn as said major fraction of effluent from the third bed and as effluent from the first bed;

step seven, in which

the feed mixture is passed through the third bed,

effluent is withdrawn from the third bed and passed through the first bed,

the eluent flow is passed through the second bed,

adsorbate product is withdrawn as effluent from the second bed, and

raffinate product is withdrawn as effluent from the first bed; and

step eight, in which

the feed mixture is passed through the first bed,

the eluent flow is passed through the third bed,

effluent from the third bed is withdrawn and is passed through the second bed, and

raffinate product is withdrawn as effluent from the first bed and from the second bed; and

step nine, in which

the feed mixture is passed through the first bed,

the eluent flow is passed through the third bed,

adsorbate product is withdrawn as effluent from the third bed,

effluent from the first bed is withdrawn and is divided into a major fraction containing between about 50 and 95 volume percent and a minor fraction containing between about 5 and 50 volume percent,

said minor fraction is passed through the second bed, and

raffinate product is withdrawn as said major fraction of effluent from the first bed and as effluent from the second bed.

4,436,534

METHOD FOR REDUCING DESORBENT CONSUMPTION IN RECOVERY SYSTEMS

Bernard R. Seguy, Amcec Corporation, 2625 Butterfield Rd., Oak Brook, Ill. 60521

Filed Nov. 8, 1982, Ser. No. 440,076

Int. Cl.³ B01D *53/04*

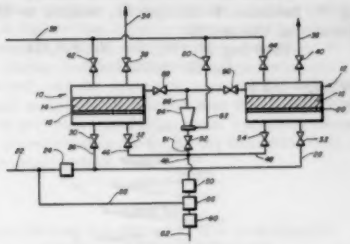
U.S. Cl. 55—58 **22 Claims**

1. In a desorption stage in the operation of a system for recovering a chemical substance from a carrier medium, wherein an externally supplied desorbent used in the desorption of an adsorber in said system is heated prior to its introduction to said adsorber, the method for reducing consumption of said preheated desorbent during the desorption of said adsorber comprising the steps of:

initiating a flow of said preheated desorbent through the adsorber to commence the desorption operation;

reducing the flow of said preheated desorbent entering the adsorber at a predetermined time during the desorption operation; and

recirculating through the adsorber for a predetermined time a portion of the mixture leaving the adsorber, without



heating said portion, to effect further desorption of the adsorber.

4,436,535

METHOD AND DEVICE FOR REMOVING SOOT FROM EXHAUST GASES

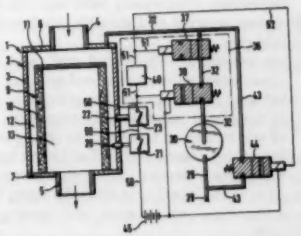
Hans Erdmannsdörfer, Ludwigsburg; Manfred Wagner, Stuttgart, and Gerd Weyh, Leonberg-Eltingen, all of Fed. Rep. of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,650

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111228

Int. Cl.³ B01D *46/04*

U.S. Cl. 55—96 **15 Claims**



1. A method of removing soot from the exhaust gases of an internal combustion engine, particularly of a diesel engine, comprising the steps of:

filtering the soot particles from the exhaust gas by means of an exhaust filter which retains and collects the soot;

during operation of the engine, from time to time burning off the collected soot to a gas which passes through the exhaust filter by adding to the soot a dose of a flowable combustion-inducing substance which lowers the soot ignition temperature and a supply of combustion air;

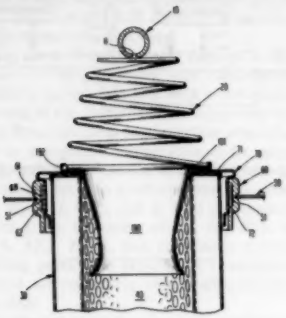
monitoring the temperature inside the exhaust filter and using the presence of an operating temperature above a predetermined level as a precondition for the initiation of the burn-off step; and

monitoring the accumulation of soot in the exhaust filter, in terms of the resultant increase in the flow resistance of the filter, and using the presence of a predetermined flow resistance as a trigger condition for the initiation of the burn-off step.

4,436,536
DUST COLLECTING FILTER CARTRIDGE AND ATTACHMENT STRUCTURE FOR SUSPENDING SAME FROM BAGHOUSE TUBE SHEET

James W. Robinson, Woodridge, Ill., assignor to Flex-Kleen Corporation, Chicago, Ill.

Filed Sep. 29, 1982, Ser. No. 428,324
Int. Cl.³ B01D 46/52
U.S. Cl. 55—341 R 3 Claims



1. A dust filter baghouse comprising;

A. A baghouse tube sheet having a plurality of openings therein;

B. A plurality of small-diameter filter cartridges, each filter cartridge comprising a cylindrical perforated sleeve, an annular pleated filter media which encircules said sleeve, and a cap secured to the upper end of said filter media,

C. Attachment structure suspending each of said filter cartridges from said baghouse tube sheet in registry with one of said openings, said attachment structure comprising:

a. a collar having an annular upper horizontal shoulder portion, an enlarged rim portion, and an annular portion depending downwardly from said rim portion;

b. means securing said shoulder portion of said collar to said cap;

c. an annular double-beaded cuff, said cuff having an upper bead, a lower bead and an outer annular groove between said upper and lower beads receiving the edge of one of said openings in the tube sheet, said upper bead of said cuff being positioned to rest on and be supported by said tube sheet, said cuff including spring means so as to be spring biased in an outward direction toward said edge of said opening in said tube sheet; thereby to effect a dust-tight seal between said opening edge and said cuff;

d. said rim of said collar resting on and be supported by said cuff,

e. said depending portion of said collar being press fitted into said cuff to effect a dust-tight seal between said depending collar portion and said cuff.

4,436,537
MODULAR HYDRIDE CONTAINER

Pierre P. Turillon, Ramsey, N.J., assignor to MPD Technology Corporation, Wyckoff, N.J.

Continuation of Ser. No. 19,658, Mar. 12, 1979, abandoned. This application Sep. 22, 1980, Ser. No. 189,325
Int. Cl.³ B01D 53/04
U.S. Cl. 55—387 3 Claims

1. A hydrogen containment unit comprising

a. a container for gaseous hydrogen,

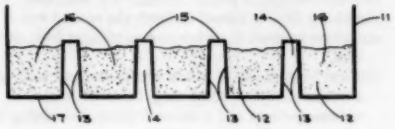
b. valved piping means to introduce gaseous hydrogen into and withdraw gaseous hydrogen from said container,

c. a multiplicity of open-topped metallic trays in said container each tray

1. having at least one depressed storage zone for pulverized solid material and

2. being made of a hydrogen resistant material of good heat conductivity

d. a multiplicity of masses of pulverized solid hydridable material in said depressed storage zones of said multiplicity of trays said masses of hydridable material being confined solely by said depressed storage zones and being



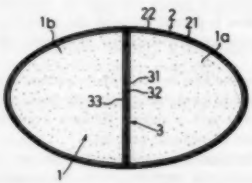
open to reaction with gaseous hydrogen in said container, and

e. said multiplicity of trays being stacked unnested in said container to thereby define a labyrinth of hydrogen gas transport passages devoid of pressure drop barriers and communicating with all of said multiplicity of masses of hydridable material and a heat transfer network extending throughout the bulk of the volume of said container.

4,436,538
FILTER FOR CLEANING EXHAUST GASES FROM DIESEL ENGINE

Masahiro Tomita, and Shigeru Takagi, both of Anjo, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 21, 1982, Ser. No. 370,348
Claims priority, application Japan, Apr. 22, 1981, 56-61824; Apr. 24, 1981, 56-62787; Apr. 28, 1981, 56-64432
Int. Cl.³ B01D 39/20
U.S. Cl. 55—482 7 Claims



1. A filter for collecting carbon particulates in the exhaust gases emitted from a diesel engine, comprising:

an exhaust gas cleaning portion provided with a large number of interconnected fine pores through which exhaust gases flow; said exhaust gas cleaning portion being provided with an exhaust gas inlet surface and an exhaust gas outlet surface; and

an outer wall portion which is formed around the outer peripheral surface of said cleaning portion so as to be integral therewith, except for said exhaust gas inlet surface and said exhaust gas outlet surface of said cleaning portion;

said exhaust gas cleaning portion being formed of porous ceramic, the whole of which has uniform bulk density;

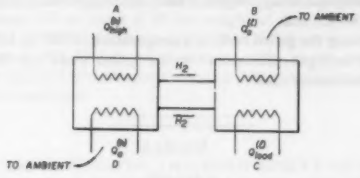
said outer wall portion being formed of porous ceramic, the bulk density of said outer wall portion increasing from the inner periphery thereof toward the outer periphery thereof so that the inner periphery of said outer wall portion has a bulk density slightly larger than that of the outer periphery of said cleaning portion while the outer periphery of said outer wall portion has such a high bulk density that the exhaust gases do not flow therethrough.

4,436,539

METHOD AND APPARATUS FOR AIR-CONDITIONING BY MEANS OF A HYDROGEN HEAT PUMP

Moshe Ron; Matvei Kleiner, and Uri Navon, all of Haifa, Israel, assignors to Technion Research and Development Foundation Ltd., Haifa, Israel

Filed Oct. 6, 1981, Ser. No. 309,225
Int. Cl.³ F25B 13/00
U.S. Cl. 62—4 10 Claims



1. A method of air-conditioning a vehicle using a hydrogen-based chemical heat pump including a dual metal hydride system of two different hydrides capable of passing hydrogen therebetween, and wherein one of the hydrides is a low-temperature hydride and the other a high-temperature hydride, said method comprising

providing said low temperature hydride in the form of a porous metal compact;

heating with waste heat from said vehicle high-temperature hydride having hydrogen absorbed therein to cause desorption of said hydrogen from said high-temperature hydride and flow to said low-temperature hydride;

absorbing said hydrogen by said low-temperature hydride while cooling said low-temperature hydride by heat exchange with the ambient atmosphere;

stopping the flow of waste heat to said high-temperature hydride upon completion of desorption; and

cooling said high-temperature hydride by heat exchange with the ambient atmosphere to provide said high-temperature hydride with a sufficiently low-temperature at which it is capable of absorbing hydrogen from said low-temperature hydride; and

further cooling said cooled low-temperature hydride containing said hydrogen absorbed therein by desorbing hydrogen therefrom and then heating at a high heat transfer rate said cooled low-temperature hydride by heat exchange with the environment being air-conditioned and further desorbing said hydrogen from said low-temperature hydride and passing said hydrogen to said cooled high-temperature hydride where said hydrogen is absorbed thereby.

3. An air-conditioning unit for a vehicle based on a hydrogen heat pump, comprising:

a high-temperature hydride tank and a low temperature hydride tank, a fixed quantity of hydrogen disposed within at least one of said tanks, means for passing said hydrogen between said tanks, first heat exchange means between a source of waste heat from said vehicle at a high-temperature and said high-temperature hydride tank, second heat exchange means between ambient and said high-temperature hydride tank, third heat exchange means between ambient and said low-temperature hydride tank, fourth heat exchange means between a space to be cooled and said low-temperature hydride tank, and

control means to control the operation of all said heat exchange means in sequence to effect heating of said high-temperature hydrides tank, desorption of hydrogen therefrom and absorption in said low-temperature hydride tank, followed by desorption of hydrogen from the low-temperature hydride tank, cooling of said space to be cooled and absorption of hydrogen in said high-temperature hydride tank;

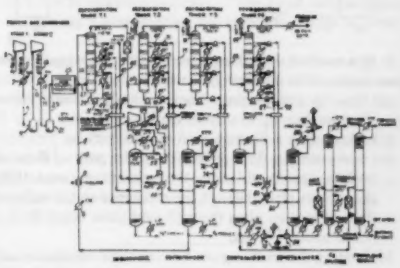
said high-temperature hydride tank and said low-temperature hydride tank respectively containing therein a high-temperature metal hydride and a low-temperature metal hydride in the form of low-temperature porous metal hydride compacts, said hydrides being so selected that the desorption pressure of said high-temperature metal hydride is higher than the absorption pressure of said low-temperature hydride at temperatures prevailing in said tanks during desorption from said high-temperature hydride tank, and the desorption pressure of said low-temperature metal hydride is higher than the absorption pressure of said high-temperature metal hydride at temperatures prevailing in said tanks during desorption from said low-pressure hydride tank.

4,436,540

LOW PRESSURE SEPARATION FOR LIGHT HYDROCARBON RECOVERY

Edward J. Dowd, deceased, late of Summit, N.J. (by Dorothy N. Dowd, legal representative), and Joseph F. Carpency, Morristown, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 15, 1982, Ser. No. 434,584
Int. Cl.³ F25J 3/02
U.S. Cl. 62—30 14 Claims



10. A process for separating a feed gaseous mixture containing light olefinic constituents and comprising C_{5+}'s down to methane and hydrogen, into fractions, which comprises in combination the steps of:

(a) compressing the feed gas to a compressor discharge pressure in the range of 50 to 100 psia prior to passing it to a recovery operation;

(b) cooling the compressed feed gas in a first refrigeration zone wherein it is passed in countercurrent contact with a C_4 stream taken from a depropanizer, to condense a C_4–C_{5+} concentrate and passing the same to a debutanizer in which it is fractionated with removal of a liquid C_{5+} fraction;

(c) cooling the residual gas from said first zone in a second refrigeration zone wherein it is passed in countercurrent contact with a C_3 stream taken from a deethanizer, to condense a C_3–C_4 concentrate, pumping the same to a higher pressure and passing the same to the depropanizer in which it is fractionated in the presence of distillate from the debutanizer;

(d) cooling the residual gas from said second zone in a third refrigeration zone wherein it is passed in countercurrent contact with a C_2 stream taken from a demethanizer, to condense a C_2–C_3 concentrate, pumping the same to a higher pressure and passing the same to the deethanizer in which it is fractionated in the presence of distillate from the depropanizer;

(e) cooling the residual gas from said third zone in a fourth refrigeration zone wherein it is passed in countercurrent contact with a predominantly methane stream taken from the demethanizer, to condense a C_1–C_2 concentrate and separating tail gas from said fourth zone; and

(f) pumping the condensed portion from said fourth zone to a higher pressure, passing it into the demethanizer and fractionating the same in the presence of distillate from the deethanizer to obtain a purified C_2 bottoms fraction and a predominantly methane vapor fraction; to obtain a saving in energy as compared with carrying out said process employing a compressor discharge pressure above said range.

4,436,541

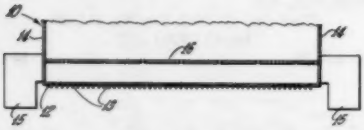
METHOD FOR PRODUCTION OF MINERAL FIBERS

Michael T. Pellegrin; Terry J. Hanna, both of Newark, and Thomas K. Thompson, Granville, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 141,872, Apr. 21, 1980, abandoned. This application Jan. 18, 1982, Ser. No. 340,177

Int. Cl.³ C03B *37/085*

U.S. Cl. 65—2 **1 Claim**



1. In a method of making glass fibers from a body of molten glass confined in a bushing, the steps of:

(a) flowing molten glass from the body through an orifice plate having a plurality of orifices;

(b) attenuating a fiber at each of said orifices;

(c) interposing a flow resistance in the path of flow of said molten glass to said plate, the ratio of resistance of flow of the molten glass through the resistance to the resistance of flow of molten glass through said plate being from about 0.5 to about 1.0; and

(d) heating the molten glass between said resistance and said plate by current supplied to both the resistance and the orifice plate;

the performance of steps (c) and (d) reducing the pressure of the molten glass at the plate by a factor of from 30 to 50% of the head pressure of the molten glass body above the plate and decreasing the bead fall time from an orifice at which fiber attenuation has been interrupted.

4,436,542

PROCESS FOR THE PRODUCTION OF AN OPTICAL GLASS ARTICLE

Shiro Kurosaki, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 11, 1981, Ser. No. 301,896

Claims priority, application Japan, Sep. 16, 1980, 55-127116; Nov. 27, 1980, 55-167820

Int. Cl.³ C03B *19/06*

U.S. Cl. 65—18.1 **22 Claims**

1. A process for the production of an optical glass article, which comprises:

preparing an aqueous solution containing silicic acid or ammonium silicate,

dissolving in the aqueous solution a water-soluble compound selected from the group consisting of thallium nitrate, cesium nitrate and rubidium nitrate,

neutralizing the resulting aqueous solution,

reacting the components of the aqueous solution at a temperature of from the freezing point to the boiling point of the aqueous solution in a time sufficient to polymerize silica and form an aggregated porous gelled body,

immersing the gelled body in a leaching liquor selected from the group consisting of water, an aqueous solution of an acid, an aqueous solution of an alkali metal salt, a ketone and an alcohol,

leaching a portion of the water-soluble compound in the form of ions from the gelled body to provide a concentration gradient of the water-soluble compound in the gelled body such that the concentration of the water-soluble compound decreases radially outwardly from the central part of the gelled body,

drying the gelled body in a predetermined atmosphere,

decomposing the water-soluble compound,

heating and firing the gelled body at a temperature of 650° to 900° C., and

sintering the gelled body at a temperature of 900° to 1450° C. to collapse micropores in the gelled body and form a transparent glass.

4,436,543

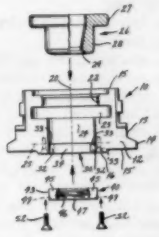
NECK RING MOLD APPARATUS FOR GLASS BOTTLE MANUFACTURE

Harold B. Kasten, 5312 Shannon, Godfrey, Ill. 62035

Filed Jun. 3, 1982, Ser. No. 384,772

Int. Cl.³ C03B *9/325, 9/48*

U.S. Cl. 65—172 **6 Claims**



1. For molding the necks of glass bottles to a desired external configuration,

neck ring mold apparatus comprising:

A. a pair of neck ring mold halves having vertical parting plane surfaces extending to bottom surfaces, the said mold halves when mounted with their parting plane surfaces together forming an annulus about a lower well of circular cross-section and having bottom portions, measured from the lowermost end of said well, whose thickness substantially equals the depth of such desired external configuration, the bottom surface of each mold half having formed therein a recess extending therefrom up to the lowermost level of said well, said recess having a pair of side walls spaced from each other at a distance substantially equal to the diameter of said well at its lowermost level, said recess further having a third wall joining said pair of side walls which third wall is parallel to the parting plane at a spacing therefrom greater than the radius of said well at its said lowermost level; and assembled therewith

B. a pair of replaceable mold inserts each insert being formed of sintered metal, one secured in each said recess and filling same from the lowermost level of said well to the mold half bottom surfaces, each insert extending from said third wall of the recess to the parting plane and presenting, substantially symmetrically thereto, half-round cavity surfaces whose radius is smaller than that of said well, which cavity surfaces are configured complementary to such desired external configuration for the neck of such glass bottles.

4,436,544

ALUMINUM BRONZE GLASSMAKING MOLDS

Thomas W. McCausland, Brockway, Pa., assignor to Brockway, Inc. (NY), Brockway, Pa.

Filed Nov. 16, 1982, Ser. No. 442,006
Int. Cl.³ C03B 11/00
U.S. Cl. 65—374.12 24 Claims

1. A glassmaking mold part adapted for use in a glassware forming machine, which comprises a mold member shaped from an aluminum bronze alloy composition essentially consisting of (i) less than about 0.5% by weight manganese, (ii) from about 3.5 to about 4.5% by weight of nickel, (iii) from about 3.5 to about 4.5% by weight of iron, (iv) from about 10.5 to about 11.5% by weight aluminum, with (v) the balance copper, and (vi) said composition being substantially devoid of both zinc and lead.

4,436,545

PROCESS HAVING THE TWO-FOLD RESULT OF THE DISPOSAL OF WASTE PICKLE LIQUOR AND THE PRODUCTION OF FERTILIZER

Donald W. Lyons, Jr., Fort Scott, Kans., and Everette L. Wyatt, Carthage, Mo., assignors to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Jul. 30, 1982, Ser. No. 403,424
Int. Cl.³ C05C 9/00
U.S. Cl. 71—25 11 Claims

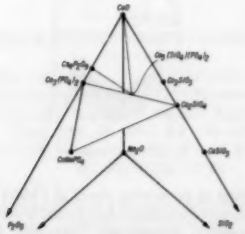
1. A process for the disposal of waste pickle liquor from a ferrous metal treating operation and the production of a useful fertilizer comprising mixing urea in waste sulfuric acid pickle liquor at a temperature sufficient to avoid substantial formation of iron precipitate whereby a liquid fertilizer having an iron content of at least about 3% by weight is produced comprising a stable urea-iron sulfate combination which does not salt out at a temperature of 20° C.

4,436,546

FERTILIZER MATERIAL FROM APATITE

Fredrik P. Glasser, Bucksburn, Scotland, and Richard P. Gunawardane, Kandy, Sri Lanka, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 261,162, filed as PCT GB80/00139, Sep. 8, 1980, published as WO81/00711, Mar. 19, 1981, § 102(e) date Apr. 30, 1981, Pat. No. 4,363,650. This application Jul. 30, 1982, Ser. No. 406,713
Claims priority, application United Kingdom, Sep. 7, 1979, 7931090
The portion of the term of this patent subsequent to Dec. 14, 1999, has been disclaimed.
Int. Cl.³ C05B 13/00
U.S. Cl. 71—36 6 Claims



1. A method of making a fertilizer material from hard mineral apatite rich in chlorine and/or fluorine, by roasting apatite at from about 880° C. to about 950° C. as a final temperature with a carbonate and/or aluminosilicate of an alkali metal in an amount such that the molar ratio of apatite (as P_2O_5):alkali metal:siliceous material (as SiO_2) is 1:at least 3:(0.75–1.0) whereby there is ensured the presence of sufficient siliceous material to keep the free-lime content of the fertilizer material below 2 weight % and to inhibit formation of tetracalcium phosphate.

4,436,547

PLANT TECHNIQUE

Michael J. Sampson, Chichester, England, assignor to Staart Enterprises Ltd., London, England

PCT No. PCT/GB79/00050, § 371 Date Nov. 28, 1979, § 102(e) Date Oct. 27, 1979, PCT Pub. No. WO79/00838, PCT Pub. Date Oct. 18, 1979
PCT Filed Mar. 22, 1979, Ser. No. 85,918
Int. Cl.³ A01N 43/48, 43/40, 33/02
U.S. Cl. 71—76 8 Claims

1. A method of applying an agricultural chemical comprising the steps of

(A) applying an effective amount of an agricutural chemical to a locus to regulate the growth of plants, said agricultural chemical being selected from the group consisting of quaternary ammonium compounds of the formula $R—N(CH_3)_3—Y$ in which Y is a non-phytotoxic anion and R is an aliphatic radical of from 1 to 8 carbon atoms containing a non-ionizing nucleophilic group or atom; and

(B) applying an effective amount of additive to modify the metabolism of plants to the same locus as said agricultural chemical not more than 15 days earlier than or more than 15 days later than the application of said agricultural chemical, said additive being vitamins or coenzymes selected from the group consisting of thiamine, riboflavin, pyridoxine, pyridoxamine, pyridoxal, nicotinamide, folic acid, or the precursors of said vitamins or coenzymes.

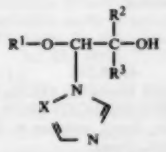
4,436,548

PLANT GROWTH REGULATING α-AZOLYLGLYCOLS

Bernd Zeeh, Ludwigshafen; Norbert Göetz, Worms; Eberhard Ammermann, Ludwigshafen, and Johann Jung, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 23, 1981, Ser. No. 324,276
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1980, 3047726
Int. Cl.³ A01N 43/50, 43/64; C07D 249/08, 233/60
U.S. Cl. 71—76 1 Claim

1. A process for reducing plant height and/or lateral plant branching which comprises: applying to the plants to be acted upon or to their seeds or to their habitat an effective amount of a composition comprising a liquid or solid carrier and a compound I of the formula



I

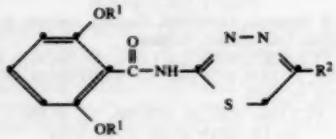
where R^1 is alkyl of 1 to 4 carbon atoms, R^2 is alkyl of 1 to 6 carbon atoms or unsubstituted or halogen substituted phenyl or biphenyl, R^3 is hydrogen, alkyl of 1 to 6 carbon atoms or alkenyl or alkynyl of 2 to 6 carbon atoms or unsubstituted or halogen substituted benzyl and X is CH or N, and their plant-tolerated salts.

4,436,549
THIADIAZINE HERBICIDES

Thomas D. Thibault, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 28, 1982, Ser. No. 437,380
Int. Cl.³ A01N *43/88*; C07D *285/16*
U.S. Cl. 71—90 **15 Claims**

1. A compound of the formula



wherein:

each R^1 is independently methyl or ethyl;

R^2 is C_1–C_{10} alkyl, C_3–C_8 cycloalkyl or C_1–C_4 alkyl substituted C_3–C_8 cycloalkyl; and the agronomically-acceptable salts thereof.

4,436,550
PROCESS FOR RECOVERY OF ALUMINUM FROM CARBONACEOUS WASTE PRODUCTS

Laszlo Kapolyi, Budapest, Hungary, assignor to Tatabanyai Szenbányák, Tatabánya, Hungary

Continuation of Ser. No. 15,970, Feb. 28, 1979, abandoned, which is a continuation-in-part of Ser. No. 819,811, Jul. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 755,405, Dec. 29, 1976, abandoned. This application Jan. 20, 1982, Ser. No. 340,996
Int. Cl.³ C22B *21/02*
U.S. Cl. 75—10 R **4 Claims**

1. A process for producing energy and products useful in the manufacture of metals, cement and artificial stone which comprises the steps of:

(a). combusting a carbonaceous waste material containing silica and alumina; and having a heat of combustion of from about 2,000 kcal/kg to about 3,500 kcal/kg to form thermal energy and a slag containing silica and alumina;

(b). adjusting the composition of said slag by adding a mineral additive including a calcium containing material to said slag to obtain upon sintering calcium silicate and calcium aluminate;

(c). additionally adding an amount of under 1% of ferrosilicon alloy to the adjusted slag to promote disintegration upon sintering and cooling;

(d). sintering and cooling the adjusted slag of step (c) to obtain a disintegrated material;

(e). separating said disintegrated material and recovering a separated material and a first residue remaining useful for forming artificial stone;

(f). treating said separated material with an aqueous solution to extract aluminum values and leaving a second residue useful for forming cement;

(g). treating said aluminum values to obtain alumina;

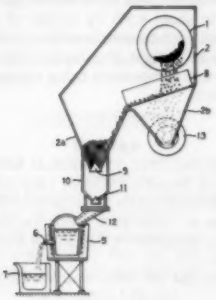
(h). treating said alumina to obtain aluminum.

4,436,551
PROCESS FOR MAKING STEEL FROM DIRECT-REDUCED IRON

Takashi Mori, Niihama, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Oct. 15, 1982, Ser. No. 434,455
Claims priority, application Japan, Oct. 26, 1981, 56-171103; Jan. 26, 1982, 57-11680
Int. Cl.³ C21C *5/28*, *5/52*
U.S. Cl. 75—12 **17 Claims**

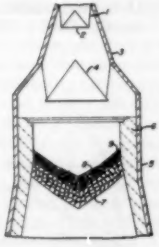
1. In a process for manufacturing steel in which an iron oxide-containing starting material is heated and reduced with a solid, carbon-containing, reducing agent in a reducing furnace to form pellets of direct-reduced metallic iron mixed with char, and then said direct-reduced metallic iron is smelted in a separate smelting furnace to form said steel, the improvement which comprises: discharging said pellets of direct-reduced metallic iron mixed with char from the outlet of said reducing furnace into a hood which provides a substantially air-tight enclosure around said reducing furnace outlet, then feeding said pellets mixed with an amount of char sufficient to form pig iron when said char is melted with said pellets from said hood into a heating furnace while said pellets remain at substantially the same high temperature that they had when they were dischaged from said reducing furnace and while said pellets are protected from substantial oxidation caused by contact with the ambient air, then melting said pellets mixed with char in said heating furnace to form molten pig iron, then discharging said molten pig iron from said heating furnace into a ladle, and then discharging said molten pig iron from said ladle into said smelting furnace.



4,436,552
METHOD OF FURNACE OPERATION WITH HIGH PELLET BURDENS

Melvin C. Chang, Charlotte, N.C., and John L. Howell, North Huntingdon, Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 9, 1982, Ser. No. 406,422
Int. Cl.³ C21B *5/00*
U.S. Cl. 75—41 **24 Claims**



1. In the method of producing metal in a shaft furnace containing one or more substantially horizontal layers of coke and one or more separate substantially horizontal layers of ore above and/or below the coke layers, said layers being positioned across the furnace cross section, and wherein greater than about 80 percent of the ore therein is present in the form of pellets, the improvement comprising separating fine ore material from said pellets, and then adding the separated fine ore material on a controlled basis to said furnace adjacent to the walls of said furnace to reduce the gas flow adjacent said

walls and thereby protect the furnace lining, and wherein subsequent to separating said fine ore material from said pellets and prior to adding said fine ore material to said furnace, the ultrafine fraction of said ore material which would present material handling problems when wet or be blown out of the furnace by the hot furnace gases is either (1) separated from said fine material which is added to said furnace, or (2) micropelletized prior to addition to said furnace in order to provide a material having suitable properties for flowing into said furnace.

4,436,553

PROCESS TO PRODUCE LOW HYDROGEN STEEL

Rockne J. Andreini, Bellevue, Wash.; Stewart K. Mehlman, Tarrytown, N.Y.; Ronald J. Selines, Yorktown Heights, N.Y., and Balkishan Agrawal, Ossining, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jan. 22, 1982, Ser. No. 341,440

Int. Cl.³ C21C *7/00*

U.S. Cl. 75—52 **10 Claims**

1. A process for the production of steel having a hydrogen content of less than about 2 ppm, comprising:

charging a steel melt into a refining vessel equipped with at least one submerged tuyere, making alloying and slag-forming additions to the melt, decarburizing the melt by injecting a gas mixture comprising oxygen and a dilution gas into the melt through said tuyere(s); following decarburization, injecting sparging gas into the melt through said tuyere(s), said tuyere(s) being gas cooled during at least a portion of the production process, characterized by the steps comprising, in combination:

(1) providing a substantially dry refining vessel into which the melt is charged,

(2) providing substantially dry cooling gas to the tuyere(s),

(3) substantially completing all of the slag-forming additions to the melt prior to the start of decarburization,

(4) fluxing the slag forming additions prior to the start of decarburization,

(5) substantially completing the addition of all those elements to the melt which are reducable by silicon prior to the start of decarburization,

(6) decarburizing the melt to essentially its aim carbon content by injecting into the melt through said tuyere(s), a gas mixture of oxygen and a dilution gas for a time sufficient to remove at least 0.2 weight percent carbon from the melt and maintaining an off-gas flow rate during said decarburization sufficient to substantially prevent air from infiltrating into said vessel, and

(7) maintaining the off-gas flow rate during any reduction and finishing steps at a rate sufficient to substantially prevent air from infiltrating into said vessel by injecting sparging gas into the melt through said tuyere(s) in an amount at least equal to 100 cubic feet per ton of melt.

4,436,554

HIGH STRENGTH AND HIGH TOUGHNESS WELDING MATERIAL

Takashi Omae; Kisaburoo Tanaka; Masahiro Aoki; Fumitoshi Hirayama, and Susumu Izaki, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 29, 1982, Ser. No. 437,886

Claims priority, application Japan, Nov. 18, 1981, 56-183722

Int. Cl.³ C22C *38/44*

U.S. Cl. 75—128 T **1 Claim**

1. A high strength and high toughness steel welding material which has been modified by subjecting a welding portion welded with said welding material to quenching and annealing said welding material consisting essentially of: C: 0.05–0.15%, Si: 0.25–0.70%, Mn: 0.60–1.80%, Cu: an effective amount up to 0.20%, Ni: 4.5–11.0%, Cr: 0.20–1.20%, Mo: 0.20–0.60%, Ti: 0.03–0.12%, and the balance being substantially iron and wherein the Cr+Mo is from 0.40% to $0.030\times(Ni\%)^2$ by weight, said welding material having a yield strength ranging from 75–100 Kgf/mm^2 and having a low temperature durability of over 28 kg/mm^2 at −90° C.

4,436,555

MAGNESIUM PHOSPHATE GLASS CEMENTS WITH CERAMIC-TYPE PROPERTIES

Toshifumi Sugama, Mastic Beach, and Lawrence E. Kukacka, Port Jefferson, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 23, 1982, Ser. No. 422,510

Int. Cl.³ C04B *9/04*

U.S. Cl. 106—85 **7 Claims**

1. A method of making a fast-setting magnesium glass cementitious material comprising the steps of:

heating a first magnesium oxide powder to a temperature of about 900° C., said first magnesium oxide powder having a surface area in the range of 18–20 square meters per gram;

heating a second magnesium oxide powder to a temperature greater than 1300° C., said second magnesium oxide powder having a surface area in the range of 1–3 square meters per gram;

mixing said first and second magnesium oxide powders with a aggregate; and

mixing an aqueous ammonium polyphosphate solution with the mixture of said aggregate and said first and second magnesium oxide powders in forming said fast-setting magnesium glass cementitious material.

4,436,556

PROCESS FOR CONSOLIDATING SOIL AND FROST PROTECTION LAYERS PRODUCED THEREBY

Friedrich Kadelka, Bad Segeberg, Fed. Rep. of Germany, assignor to Chemische Fabrik Grunau GmbH, Illertissen, Fed. Rep. of Germany

Filed Jul. 24, 1981, Ser. No. 286,678

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1980, 3028670

Int. Cl.³ C04B *7/35*

U.S. Cl. 106—90 **25 Claims**

1. In a process for the consolidation of soil in which moisture containing soil, rubbish or a mixture of soil and rubbish is mixed with cement and then compressed to form the consolidated soil the improvement comprising adding as the sole additive a fluidizing agent to the composition to be consolidated, said fluidizing agent being the amount of fluidizing agent based on the dry material being 2.5 to 5%, based on the cement content of the composition.

4,436,557

MODIFIED LASER-ANNEALING PROCESS FOR IMPROVING THE QUALITY OF ELECTRICAL P-N JUNCTIONS AND DEVICES

Richard F. Wood, Oak Ridge, and Rosa T. Young, Farragut, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 19, 1982, Ser. No. 349,959

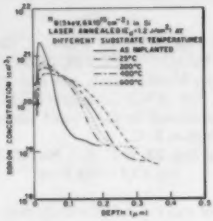
Int. Cl.³ H01L *21/263, 21/24*

U.S. Cl. 148—1.5 **11 Claims**

1. In a process for producing a light-responsive electrical-junction device, said process including the steps of providing a body of crystalline semiconductor material having a doped surface layer, irradiating said layer with at least one laser pulse to effect melting of the same, permitting recrystallization of the material so melted, and providing the resulting body with electrical contacts, the method of increasing the open-circuit-voltage parameter for said device, comprising:

heating said body to a selected temperature and conducting said irradiating operation while said body is so heated to

effect an increase in said parameter, said temperature being sufficient to effect a reduction in the rate of said



recrystallization but insufficient to effect substantial migration of impurities within said body.

4,436,558

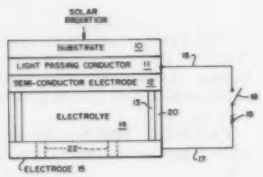
ELECTROCHEMICAL PHOTOVOLTAIC CELL HAVING TERNARY ALLOY FILM

Michael A. Russak, Farmingdale, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 216,706, Dec. 15, 1980, abandoned. This application Feb. 23, 1982, Ser. No. 351,376

Int. Cl.³ H01L *21/00*

U.S. Cl. 148—1.5 **2 Claims**



1. A method for fabricating a thin film compound semiconductor electrode of $CdSe_{1-x}Te_x$, where $0 \leqq x \leqq 1$, for an electrochemical photovoltaic cell comprising the steps:

evacuating a chamber;

exposing a light passing conducting substrate to three heated sources respectively including the elements Cd, Se, and Te; wherein the substrate is maintained at a temperature of about 90° C.;

simultaneously depositing the elements on the substrate at predetermined rates; and

heat treating the electrode.

4,436,559

PROCESS FOR MANUFACTURING BORIDE DISPERSION COPPER ALLOYS

Hironori Fujita, and Tohru Arai, both of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Jun. 11, 1982, Ser. No. 387,453

Claims priority, application Japan, Jun. 12, 1981, 56-91096

Int. Cl.³ C23F *7/00*

U.S. Cl. 148—6 **16 Claims**

1. A process for manufacturing a boride dispersed copper alloy, which comprises:

preparing a metallic material having a surface portion comprising a copper alloy containing at least one metal selected from the group consisting of beryllium, gallium, manganese, nickel, palladium, silicon and vanadium, and copper or an alloy thereof; and

diffusing boron into said metallic material to form in said surface portion thereof fine particles of a boride of at least one metal selected from the group consisting of beryllium, gallium, manganese, nickel, palladium, silicon and vanadium.

11. A process according to claim 1, wherein

nickel and copper are melted to prepare said metallic material having the surface portion of a copper-nickel alloy, and said metallic material is immersed in a molten salt bath containing boron to form fine nickel boride particles uniformly dispersed in said surface portion.

4,436,560

PROCESS FOR MANUFACTURING BORIDE DISPERSION COPPER ALLOYS

Hironori Fujita; Tohru Arai, and Jiro Mizuno, Osami Kasuya; Koichi Ono, Tashid Suzuki, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho and Kabushiki Kaisha Tokai Rika Denki Seisakusho, all of Japan

Filed Jun. 11, 1982, Ser. No. 387,455

Claims priority, application Japan, Jan. 25, 1982, 57-9731

Int. Cl.³ C23F *7/00*

U.S. Cl. 148—6 **15 Claims**

1. A process for manufacturing a boride dispersed copper alloy, which comprises:

preparing a metallic material having a surface portion comprising an alloy or fine particles of at least one element selected from the group consisting of aluminum (Al), arsenic (As), cadmium (Cd), cobalt (Co), chromium (Cr), iron (Fe), magnesium (Mg), molybdenum (Mo), niobium (Nb), platinum (Pt), tantalum (Ta), tungsten (W) and zirconium (Zr), and copper or an alloy thereof; and

diffusing boron into said metallic material to form in said surface portion thereof fine particles of a boride of at least one element selected from the group consisting of Al, As, Cd, Co, Cr, Fe, Mg, Mo, Nb, Pt, Ta, W and Zr.

11. A process according to claim 1, wherein chromium and copper are melted to prepare said metallic material having the surface portion of a copper-chromium alloy, and said metallic material is immersed in a molten salt bath containing boron to form fine CrB_2 particles uniformly dispersed in said surface portion.

4,436,561

PRESS-FORMABLE HIGH STRENGTH DUAL PHASE STRUCTURE COLD ROLLED STEEL SHEET AND PROCESS FOR PRODUCING THE SAME

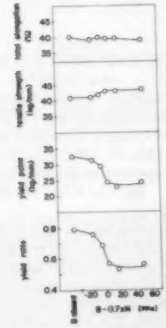
Nobuyuki Takahashi; Yoshikuni Furuno, both of Kitakyushu, and Masaaki Fukunaga, Onga, all of Japan, assignors to Nippon Steel Corporation, Japan

Filed Jul. 6, 1981, Ser. No. 281,206

Claims priority, application Japan, Jul. 5, 1980, 55-91998

Int. Cl.³ C21D *8/04*

U.S. Cl. 148—12 F **5 Claims**



1. A process for producing a press-formable, high-strength,

dual phase structure cold rolled steel sheet having a tensile strength of 40–50 kg/mm^2 which comprises hot rolling, at a finishing temperature higher than the Ar_3 transformation point, a steel slab consisting of C: 0.02–0.20%, Si: less than 0.1%, Mn: 1.2–2.0%, acid-soluble Al: 0.005–0.100%, B: more than 0.0003% and less than 0.0050% in terms of $B\% - 0.7 \times N\%$ in solid solution on the condition that B/C is more than 0.03, N: less than 0.0060%, the balance being iron and incidental impurities; cooling the hot strip at a rate of 10° to 150° C./sec, coiling the strip at a temperature lower than 730° C., pickling and cold rolling the coil, soaking the cold rolled strip at an annealing temperature between the Ac_1 transformation point and 800° C., and cooling the strip at a rate of more than 3° C./sec.

4,436,562

BASIC BONDED FLUXES FOR SUBMERGED ARC WELDING HAVING AN EXCELLENT REMOVABILITY OF SLAG AT A NARROW GROOVE

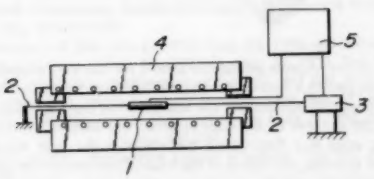
Masaaki Tokuhisa, and Yukio Hirai, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Dec. 30, 1981, Ser. No. 335,888

Claims priority, application Japan, Jun. 5, 1981, 56-85614

Int. Cl.^{3} B23K *35/34*

U.S. Cl. 148—24 **2 Claims**



1. In basic bonded fluxes for submerged arc welding at a narrow groove consisting of a mixture of a slag forming composition, a gas forming composition and metal powders, the improvement comprising the slag forming composition consisting mainly of 5–20% by weight of BaO, not more than 10% by weight of CaO, 20 to 50% by weight of MgO, 6–25% by weight of SiO_2, 3–15% by weight of Al_2 Oz and 7–18% by weight of CaF2, a value of basicity shown by a ratio of a basic component and an acidic component being 2.3 to 4.5, and the gas forming composition consisting of $BaCO_3$, $CaCO_3$ and $MgCO_3$, a total amount of which is 10–60% by weight, whereby a removability of slag at a narrow groove weld is improved.

4,436,563

FLUX FOR OVERLAY WELDING

Osamu Tanaka, Fujisawa; Kazuhiro Takeba, Yamato; Hiroshi Saita, Fujisawa; Yukinobu Matsushita, Yokohama, and Koji Koyabu, Kamakura, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jul. 21, 1982, Ser. No. 400,586

Claims priority, application Japan, Jul. 27, 1981, 56-118241

Int. Cl.^{3} B23K *35/34*

U.S. Cl. 148—26 **3 Claims**

2. A flux as claimed in claim 1, wherein the ratio of $MgO/SiO_2 \leqq 2.0$.

4,436,564

REINFORCEMENT PRODUCT FOR USE IN CEMENT BOARDS AND A METHOD OF MANUFACTURING SAID PRODUCT AND BOARDS

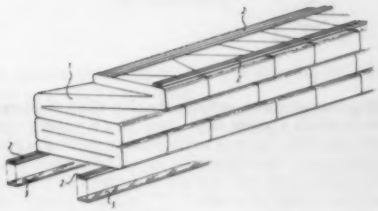
Ian D. Slack, Bradford; David G. Ellis, Leeds, and Colin Firth, Bradford, all of England, assignors to Plasticisers Limited, Yorkshire, England

Filed Aug. 3, 1981, Ser. No. 289,377

Claims priority, application United Kingdom, Aug. 2, 1980, 8025300

Int. Cl.^{3} B32B *3/18, 5/10, 5/12, 13/02*

U.S. Cl. 156—42 **14 Claims**



1. A reinforcement product for use in cement boards, comprising cross layered webs of plastic fibre with a preponderance of fibres laid in a trans-axial direction, and continuous filaments or fibrillated tapes located between the layers to impart a high degree of strength in the linear direction, the cross-laid web and the filaments or tapes being compacted together to form a reinforcement product which can be rolled up and handled for further processing on cement board forming machines, the webs of plastic being formed from a sheet or film of plastics material which has been monoaxially orientated in the linear direction, fibrillated to form a cohesive fibre mass, cut into desired lengths, carded to break up the film into a coarse fibre mass, and stripped from the carding machine to form a continuous web of fibres.

4. A method of manufacturing a reinforcement product for use in cement boards, a comprising the steps of extruding a sheet or film from a plastics material, monoaxially orientating the said sheet in the linear direction fibrillating the orientated sheet to form a cohesive fibre mass, cutting the fibrillated film into desired lengths, carding the cut lengths of fibrillated film on a carding machine, to break up the fibrillated film into a coarse fibrous mass, and stripping the fibrous mass from the carding machine to form a continuous coarse fibrous web, cross layering the web of fibres to ensure an even thickness with a preponderance of the fibres being laid in a transaxial direction, introducing continuous filaments or fibrillated tapes between the layers to impart a high degree of strength in the linear direction, and compacting the cross-laid web of fibres together with said continuous filaments or fibrillated tapes, to give cohesion between the fibres in the web and produce a web which can be rolled up and handled for further processing on cement board forming machines.

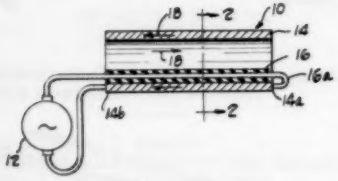
11. A method of manufacturing a cement board using a reinforcement product constructed by the method according to claim 5 wherein a cement slurry is impregnated into the reinforcement product, excess moisture is subsequently removed, and the board is then allowed to set.

4,436,565

METHOD OF MAKING A HEATING DEVICE FOR UTILIZING THE SKIN EFFECT OF ALTERNATING CURRENT

Harold B. Weitzel, Strongsville, and David G. Parman, Medina, both of Ohio, assignors to Ricwil, Incorporated, Brecksville, Ohio

Filed Oct. 22, 1981, Ser. No. 313,937
Int. Cl.³ H01R 5/02; B21F 15/02
U.S. Cl. 156—49 8 Claims



1. In a heating system utilizing the skin effect of alternating current in which a power cable comprising a primary conductor surrounded by a layer of semiconductor material, a primary insulation layer, a shield layer and an outer insulation jacket, is disposed with a heat tube and which operates with a continuous applied voltage of at least 5 KV and at a temperature of substantially 210° C., a method for joining a feed end of a length of the power cable to a terminal end of another length of the power cable, comprising the steps of:

a. removing the outer insulation jacket at the feed and terminal ends of said lengths of power cable to expose a predetermined length of said shield layer extending from the extreme ends of the cable to a first position spaced from said ends;

b. removing the shield layer, primary insulation layer and semiconductor layer from each cable end to expose the primary conductor for a distance extending from the extreme ends of the cables to a second position intermediate the ends of the cables and said first positions;

c. removing the shield layer from each cable end between said second position and a spaced, third position located intermediate said first and second position, leaving a portion of the shield layer exposed extending between said first and third positions;

d. mechanically joining together the exposed primary conductors of each cable end to form a conductor joint;

e. wrapping semiconductor material around the exposed conductor ends to completely cover said conductor joint, said material extending between the second positions of each cable end;

f. wrapping insulation material across said joint between the third position of the cable lengths until a partial insulation layer of predetermined thickness is formed, said partial layer being less than the final desired insulation thickness;

g. heat fusing said layer of wrapped insulation;

h. repeating steps (f) and (g) to obtain a substantially void free, final insulation thickness at least as thick as said primary insulation layer of said cables;

i. wrapping a semiconductor material from the first position of one cable end to a fourth position located intermediate the conductor joint and the third position of the other cable end;

j. wrapping insulation material over said semiconductor material and heat fusing said material to form a substantially void free insulation layer extending substantially between the first position of said one cable end to the third position of said other cable end;

k. electrically communicating the shield layer of said other cable end with said heat tube;

l. wrapping semiconductor material from the first position of the other cable end to a position located intermediate the conductor joint and the first position of the one cable end; and,

m. wrapping insulating material across said joint and heat fusing said material to form another layer of substantially void free insulation at least as thick as the outer insulation jacket of said cables, extending between the first positions of the joined cable ends.

4,436,566

RE-ENTERABLE CLOSURE

Dexter C. Tight, Jr., Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Jun. 15, 1982, Ser. No. 388,791
Claims priority, application United Kingdom, Jun. 15, 1981, 8118362
Int. Cl.³ H01B 13/06; H02G 13/06; B32B 3/02
U.S. Cl. 156—56 17 Claims

1. A recoverable polymeric article for use as a wraparound sleeve, having a first upstanding rail adjacent one edge thereof, and a second upstanding rail spaced from another edge such that the portion of material between the second rail and the other edge is a flap which can underlie the rails when the sleeve is in use; the sleeve at the base of the first rail or the flap having means which, on recovery of the sleeve, allows passage of sealant on a surface of the sleeve into a region between the first rail, the second rail and the flap.

15. A method of re-entering and re-enclosing a closed wraparound sleeve formed from an article according to claim 1, 8 or 9, which method comprises:

(a) removing the rails from the sleeves;

(b) removing a central portion of the sleeve, leaving intact end portions thereof which have between their respective rail butts sealant which has passed across the flap;

(c) enclosing the space between said end portions within a second recoverable sleeve such that the ends of the second sleeve at least overlie sealant between the butts of the rails; and

(d) recovering the second sleeve.

4,436,567

METHOD FOR JOINING WEBS OF ASEPTIC POUCHES

Roy J. Weikert, c/o 645 S. High St., Covington, Ohio 45318

Filed Mar. 22, 1982, Ser. No. 360,299
Int. Cl.³ B65H 69/02
U.S. Cl. 156—158 8 Claims

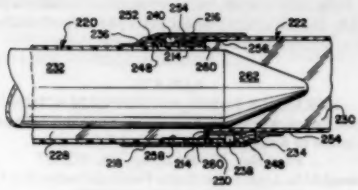
1. A method of joining together two tubular webs, each collapsed to form opposing walls, and having a sealed leading end and a sealed trailing end, comprising the steps of:

placing said leading end of one of said webs over said trailing end of the other of said webs to form overlapping ends;

applying microbicidal adhesive means between said overlapping ends, thereby joining said overlapping ends together;

forming a peel seal between said opposing walls of each of said overlapping ends above and below said adhesive means;

making a fusion-like incision through said overlapping ends within said peel seals and through said adhesive means;
sealing said incision with second microbiocidal adhesive means; and



separating portions of said peel seals of each of said webs at said incision to provide an internal passageway through the joined tubular webs.

4,436,568

IN SITU PRECIPITATED FIBROUS LAMINATE AND METHOD OF PRODUCING SAME

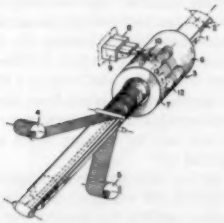
Ole-Bendt Rasmussen, Forchwaldstrasse 23, CH-6318 Walchwil/Zug, Switzerland

Continuation of Ser. No. 177,806, Aug. 13, 1980, abandoned, which is a division of Ser. No. 102,561, Dec. 11, 1979, Pat. No. 4,294,638, which is a continuation of Ser. No. 841,481, Oct. 12, 1977, abandoned, which is a continuation of Ser. No. 657,649, Feb. 12, 1976, abandoned. This application May 2, 1983, Ser. No. 488,004

Claims priority, application United Kingdom, Feb. 12, 1975, 5971/75

Int. Cl.³ B65H *81/00*; B32B *31/00*; B29C *19/00*

U.S. Cl. 156—176 **3 Claims**



1. A method of forming a fibrous sheet which comprises the steps of extruding from a given point onto a collecting surface a film of a viscous solution comprising a polymer dissolved in a solvent or swelling agent therefor, during such extrusion advancing the collecting surface away from the extrusion point, and subjecting the extruded film of said polymer extrusion to cooling to solidify the thus-extruded film to precipitate said dissolved polymer in the form of a random reticulate sheet-like array of solid fibers having a predominate grain direction by virtue of the movement of the collecting surface relative to said extrusion point, laminating the resultant fibrous sheet-like array with at least one other fibrous sheet-like array having a grain direction intersecting with that of the first sheet, and before or after said lamination substantially removing said solvent or swelling agent.

4,436,569

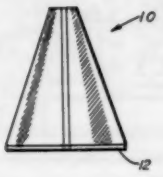
METHOD FOR FORMING A PROTECTIVE COVER FOR AIRCRAFT HAVING CONICAL RADOMES

Harold H. Somerfleck, Virginia Beach, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 21, 1981, Ser. No. 303,802

Int. Cl.³ B29D *23/10*

U.S. Cl. 156—217 **2 Claims**



1. A method of forming a protective covering for pointed radomes on aircraft, comprising:
forming a sheet of layered polyurethane, adhesive and polyethylene into a cone having an overlapping portion;
placing the conically formed sheet around a conically shaped male form with the polyethylene facing inwardly;
removing the polyethylene at the overlapping portion and bonding the polyurethane;
placing the male form with the conically formed sheet thereabout into a female mold having a shape corresponding to the desired shape for aircraft radomes;
heating the female mold;
reducing the pressure in the female mold to draw the sheet of layered material into the shape thereof;
cooling the mold while still under reduced pressure;
removing the formed protective covering from the female mold; and
removing the inwardly facing sheet of polyethylene to expose the adhesive prior to applicaion to a radome.

4,436,570

PROCESS FOR BONDING FILMS

Karl-Friedrich Neuhaus, Krefeld; Horst Müller-Albrecht, Cologne; Manfred Dollhausen, Odenthal, and Hermann Perrey, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 15, 1982, Ser. No. 398,736

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1981, 3130430

Int. Cl.³ B32B *31/00*

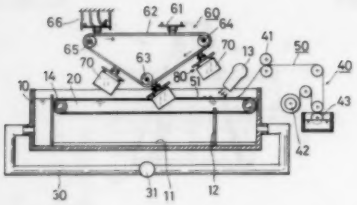
U.S. Cl. 156—273.3 **11 Claims**

1. A process for bonding a film to a substrate comprising:
(a) applying a layer from 0.5 to 20 μm thick of an adhesive which may be cross-linked by high energy radiation to the film to be bonded,
(b) contacting the film of (a) with the substrate, and
(c) subjecting the adhesive to high energy radiation
wherein the adhesive is a mixture of
(i) at least one polyisocyanate and
(ii) at least one compound containing both a (meth)acryloyl group and a hydroxyl group in which the equivalent ratio of hydroxyl groups to isocyanate groups is from 0.8:1 to 1.3:1.

4,436,571
PRINTING APPARATUS

Motoyasu Nakanishi, Fujishi, Japan, assignor to Kabushiki Kaisha Cubic Engineering, Shizuokaken, Japan

Filed Jul. 26, 1982, Ser. No. 401,983
Claims priority, application Japan, Aug. 18, 1981, 56-129878
Int. Cl.³ B44C 1/16
U.S. Cl. 156—384 16 Claims

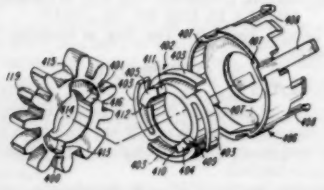


1. A printing apparatus comprising
(a) a transcription tub for containing a liquid, which is open at its upper side,
(b) a means for directing a flow of the liquid through said transcription tub at a fixed rate,
(c) a film supplying means, provided at an upstream side of said transcription tub relative to the flow direction of the liquid through said transcription tub, for supplying a long transcription film onto the surface of the liquid so that a transcription pattern on the film is kept face up, and
(d) an article supplying means, provided above said transcription tub, for immersing at least part of an article to be printed upon into the liquid while keeping the article in contact with the transcription pattern of the film, wherein said article supplying means includes means for directing the article to be printed upon from above said transcription tub downward and downstream into downward and downstream slanting contact with the film and transcription pattern thereon in said transcription tub, changing the direction of movement of the article within the liquid and transferring the transcription pattern onto the article and lifting the article slantingly upward and downstream to move the article and transcription pattern out of the transcription tub.

4,436,572
HAND-HELD LABELER

James A. Makley, Miamisburg, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 272,795, Jun. 11, 1981, Pat. No. 4,352,710. This application Sep. 24, 1982, Ser. No. 423,374
Int. Cl.³ B32B 31/00
U.S. Cl. 156—384 10 Claims

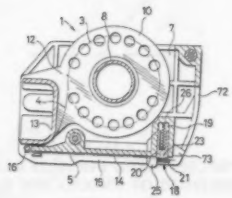


1. Hand-held apparatus for printing and applying labels releasably secured by pressure sensitive adhesive to a carrier web, comprising: a housing including a handle, an actuator disposed at the handle, a movably mounted print head, a platen cooperable with the print head, gearing drivably connecting the actuator and the print head, means for delaminating printed labels from the carrier web, means for applying labels, a feed wheel engageable with a carrier web, a ratchet wheel for driving the feed wheel, a pawl member driven by the gearing and cooperable with the ratchet wheel, means providing a lost-motion connection between the gearing and the feed wheel so that the feed wheel is driven through a relatively small angle, and wherein the pawl member includes a plurality of pawls and the ratchet wheel has a plurality of ratchet teeth equal in number to the number of pawls.

4,436,573
PORTABLE LABEL APPLYING MACHINE

Yo Sato, Tokyo, and Tadao Kashiwaba, Kitakami, both of Japan, assignors to Kabushiki Kaisha Sato, Japan

Filed Dec. 23, 1982, Ser. No. 452,707
Related U.S. Application Data. This Application is a Continuation-in-part of Application Ser. No. 368,732.
Claims priority, application Japan, Dec. 28, 1981, 56-210021; Jan. 20, 1982, 57-4943[U]
Int. Cl.³ B65C 9/18, 11/00
U.S. Cl. 156—384 22 Claims



1. A portable label applying machine, comprising:
a printing device for printing a label strip in which the label strip comprises a plurality of labels removably positioned in series, one after the other, on a web of backing paper;
a separate applying device for applying labels which have been peeled from the web of backing paper to other objects, and including an applying section to apply peeled labels to other objects;
a separate cassette detachably mountable selectively on one of the printing device and the applying device; said cassette comprising a section for receiving and supporting thereon a printed label strip which is fed thereto from the printing device and also for feeding the label strip to a peeling section; a peeling section for bending only the backing paper web of the label strip in a direction and to an extent for peeling off the labels from the backing paper web; and a self-contained guide section for receiving and guiding the bent web of backing paper after the labels have been peeled off;
the applying device also including a manually operable feeding mechanism for engaging the backing paper web after the feeding section for moving the backing paper web through manual action, for effecting peeling of the labels from the backing paper web.

4,436,574
RADIAL MANDREL

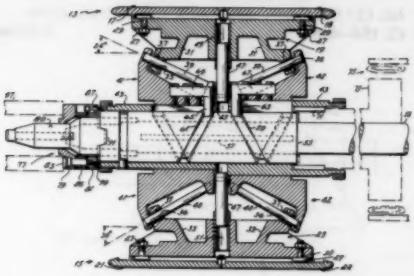
Robert C. Long, Randolph, and Richard K. Peters, Tallmadge, both of Ohio, assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Filed Dec. 13, 1982, Ser. No. 449,135
Int. Cl.³ B29H 17/16
U.S. Cl. 156—415 8 Claims

1. In a radial mandrel for use in forming wound objects, said radial mandrel having a drive shaft and a plurality of alternating large segment means and small segment means supported by a pair of cone means, said pair of cone means being adapted to move axially toward and away from one another to move said large and small segment means radially inwardly and

outwardly between a contracted and expanded position, the improvement comprising:

a mechanism for axially moving said pair of cone means toward and away from one another, said mechanism including a sleeve rotatable with said drive shaft in a first and second direction, said sleeve being formed with a pair of groove means in the exterior surface thereof, said pair of cone means engaging respective ones of said groove means and following therealong with the rotation of said



sleeve, said pair of cone means being moved axially apart while following said groove means with said sleeve and drive shaft rotating in said first direction for radially moving said large and small segment means to a retracted position, and said pair of cone means being moved axially toward one another while following said groove means with said sleeve and drive shaft rotating in said second direction for radially moving said large and small segment means to an expanded position.

4,436,575

DEVICE FOR MANUFACTURING A HEATING GLASS PLATE

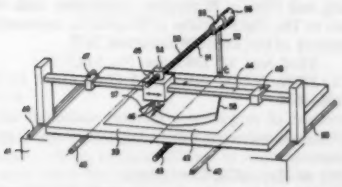
Maurice Dran, Paris, and Bernard Jamet, Sully sur Loire, both of France, assignors to Saint Gobain Vitrage, Courbevoie, France

Division of Ser. No. 223,107, Jan. 7, 1981, Pat. No. 4,395,622. This application Sep. 17, 1982, Ser. No. 419,504

Claims priority, application France, Jan. 8, 1980, 80 00278

Int. Cl.³ H06B *3/00*

U.S. Cl. 156—433 **4 Claims**



1. A device for the manufacture of glass plate having a heating network made up of fine electrical resistance wires embedded in a thermoplastic layer following curved directrices extending between two collector strips, said device comprising a supporting plate adapted to support a thermoplastic sheet, a bridge supporting a sliding carriage, resistance wire-laying members carried by said carriage, means for imparting reciprocal motion to said carriage, guides extending perpendicular to said bridge on which said bridge may slide, a rod connecting said carriage to a vertical spindle located in the median plane of the plate, and an intermittent advance mechanism for intermittently shifting the plate with respect to the carriage.

4,436,576

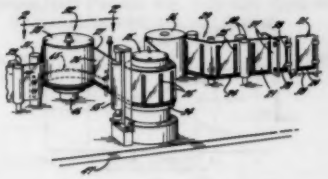
APPARATUS FOR FORMING BOTTOM HEAT SEALS

Frederick C. Selden, Holmes Beach, Fla., assignor to Rexham Corporation, New York, N.Y.

Filed Apr. 20, 1981, Ser. No. 255,760

Int. Cl.³ B32B *31/04*

U.S. Cl. 156—543 **7 Claims**



1. Apparatus for sealing together the extreme bottom portions of two face-to-face upright strips of heat sealable material as the strips are advanced lengthwise along a predetermined path, said apparatus comprising a substantially cylindrical drum having a predetermined outer diameter, means supporting said drum to rotate about an upright axis, a circular sealing ring located below and rotatable with the lower end of said drum, said sealing ring being concentric with said drum and having an outer diameter smaller than the outer diameter of the drum whereby the outer surface of said sealing ring is spaced radially inwardly from the outer surface of said drum, said sealing ring defining the lowermost strip-engaging surface of said apparatus, means for heating said sealing ring, said strips being guided so that the inner of said strips contacts a first pre-selected arc around the outer surface of said drum, pressing means mounted adjacent the lower end of said drum and extending axially above and below said lower end a distance sufficient to span an axial portion of said drum and said sealing ring, said pressing means pressing against said outer strip and acting through such strip to press an upper portion of the inner strip into engagement with a second and shorter preselected arc of the outer surface of said drum between the ends of said first arc and to press the bottom portion of said inner strip into engagement with a corresponding short arc of the outer surface of said sealing ring as said strips are advanced along said path so that between the ends of the first and second arcs said upper portion is in engagement with said drum and said bottom portion is free of engagement with said sealing ring whereby said sealing ring forms a substantially wrinkle-free seal along the bottoms of said strips.

4,436,577

METHOD OF REGULATING CONCENTRATION AND DISTRIBUTION OF OXYGEN IN CZOCHRALSKI GROWN SILICON

Roger A. Frederick, St. Louis County, and Jerry W. Moody, St. Charles, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

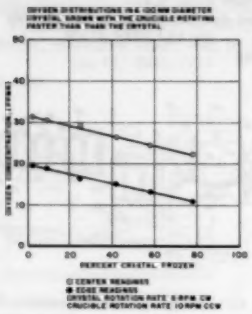
Continuation-in-part of Ser. No. 220,924, Dec. 24, 1980, abandoned. This application Aug. 9, 1982, Ser. No. 406,643

Int. Cl.³ C30B *15/00*

U.S. Cl. 156—617 SP **8 Claims**

1. In the Czochralski method for producing silicon rods wherein a single crystal silicon rod is grown by pulling from a silicon melt contained in a crucible and said rod and said crucible are rotated in opposite directions, the improvement to provide both axial and radial uniform distribution of oxygen throughout said rod comprising:

A. rotating said rod about its axis at a rate greater than the rotation rate of said crucible as said rod is grown, and



B. increasing the rotation rate of said crucible as the length of said rod increases.

4,436,578

METHOD OF SETTING A STABLE MELTING ZONE IN A SEMICONDUCTOR CRYSTALLINE ROD DURING CRUCIBLE-FREE ZONE MELTING THEREOF

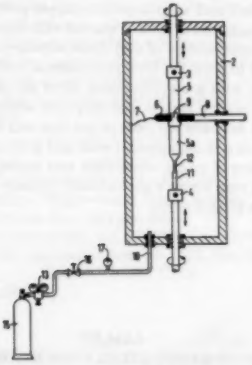
Wolfgang Keller, Munich, and Gerhard Schrötter, Neufahrn, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 12,386, Feb. 15, 1979, abandoned. This application Feb. 3, 1981, Ser. No. 231,028

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1978, 2808401

Int. Cl.³ C30B *13/20*

U.S. Cl. 156—620 **1 Claim**



1. Method of setting a stable melting zone in a semiconductor crystalline rod during crucible-free zone melting thereof in a receptacle, by means of a single-winding induction heating coil having an inner diameter smaller than the diameter of a portion of the rod being fed to the melting zone which comprises evacuating the receptacle to a pressure of 10^{-5} mm Hg, subsequently performing the crucible-free zone melting in an argon atmosphere having a degree of purity of 99.999% in the receptacle at a constantly maintained overpressure in vicinity of at least 1.5 ata and maximally 6 ata, and setting the outer melting-zone height at a value of between 15 and 23 mm for a diameter of the recyrstallized rod portion within a range of 30 to 50 mm, at a value of between 18 and 26 mm for a diameter of the recrystallized rod portion within a range of 50 to 75 mm and at a limiting value of 32 mm for a rod diameter greater than 75 mm.

4,436,579

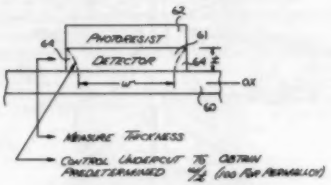
METHOD OF FORMING MULTIPLEXED MAGNETIC BUBBLE DETECTORS

Donald K. Rose, and Peter J. Silverman, both of Palo Alto, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 229,345, Jan. 29, 1981. This application Jul. 25, 1983, Ser. No. 516,980

Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—626 **4 Claims**



3. During the fabrication of a magnetic bubble detector which includes a magnetoresistive detection elements and a propagation element insulated from said detection element, a process for optimizing the output from said detection element comprising the steps of:

determining the thickness of the layer from which said detection element is to be formed;

forming a masking member over said layer to define said detection element;

etching said detection element from said layer, including controlling the undercutting of said detection element below said masking member so as to obtain a predetermined width of said detector element, said width being selected such that the width to thickness ratio of said detection element is approximately equal to a predetermined number;

whereby the output of said detection element is optimized.

4,436,580

METHOD OF PREPARING A MERCURY CADIUM TELLURIDE SUBSTRATE FOR PASSIVATION AND PROCESSING

Phillip R. Boyd, Upper Marlboro, Md.; Gary K. Green, Fredericksburg, and Barbara E. Sumner, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 12, 1983, Ser. No. 522,775

Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—636 **6 Claims**

1. A method of preparing a mercury cadmium telluride substrate for passivation and processing, said method comprising the steps of:

providing an $Hg_{1-x}Cd_xTe$ substrate;

etching said substrate with a bromine methanol etch until the surface of said substrate is free of visible oxides and residual impurities;

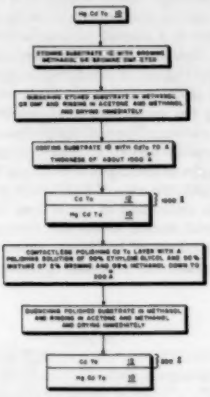
quenching the etched substrate until all traces of bromine is removed and rinsing in acetone and methanol to remove soluble residuals and drying immediately;

coating said $Hg_{1-x}Cd_xTe$ substrate with CdTe in a coating system evacuated down to about $2–5\times10^{-7}$ Torr wherein said CdTe is deposited on said substrate at about 10–12 Å per second to a thickness of about 1000 Å;

polishing the processed CdTe layer of said substrate by a contactless polish means having a polishing solution comprised of 50% ethylene glycol and 50% methanol and bromine mixture of 2% bromine and 98% methanol,

wherein said CdTe layer is polished down to generally less than 200 Å; and

quenching the polished substrate in methanol until all traces of bromine is removed and rinsing in acetone and methanol to remove soluble residuals and drying the substrate immediately whereby the quality of the $Hg_{1-x}Cd_xTe$ layers is improved by the CdTe processing steps to yield a surface exhibiting improved quality and smaller variations in composition or x-valve.



4,436,581

UNIFORM ETCHING OF SILICON (DOPED AND UNDOPED) UTILIZING IONS

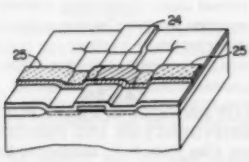
Sadayuki Okudaira; Hiroji Saida, both of Kokubunji; Yoshio Sakai, Hachioji; Shigeru Nishimatsu, Kokubunji, and Keizo Suzuki, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 20, 1982, Ser. No. 370,147

Claims priority, application Japan, Apr. 22, 1981, 56-59852

Int. Cl.³ H01L *21/308*

U.S. Cl. 156—643 **11 Claims**



1. In a dry etching method for simultaneously etching a plurality of silicon regions different in impurity concentration from each other, by bringing said silicon regions into contact with a plasma, the improvement comprising a step of performing dry etching, in a magneto-microwave etching apparatus, for said silicon regions substantially only by ions contained in said plasma, whereby each of said plurality of silicon regions different in impurity concentration from each other is etched at substantially the same etching rate to provide etching to substantially the same depth.

10. In a dry etching method for simultaneously etching a plurality of silicon regions different in impurity concentration from each other, by bringing said silicon regions into contact with a plasma, the improvement comprising providing a plasma, for said dry etching of said plurality of silicon regions, with a sufficiently high density, generated in a sufficiently low-pressure gas, such that the dry etching is carried out substantially only by ions contained in said plasma, whereby each of said plurality of silicon regions different in impurity concentration from each other is etched at substantially the same etching rate to provide etching to substantially the same depth.

4,436,582

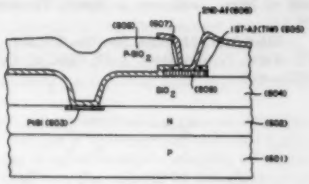
MULTILEVEL METALLIZATION PROCESS FOR INTEGRATED CIRCUITS

Arjun N. Saxena, 4217 Pomona Ave., Palo Alto, Calif. 94306

Filed Oct. 28, 1980, Ser. No. 201,109

Int. Cl.³ C23F *1/02*

U.S. Cl. 156—656 **6 Claims**



1. A process for fabricating electrical connections on an integrated circuit structure between a lower electrically conducting layer and a next upper electrically conducting layer with the material of said lower and next upper layers being selected from the group including metals and alloys, the process comprising:

forming electrically conductive first material on the integrated circuit structure in at least one location where the lower and the next upper layer are to be electrically connected, the first material being inert to etchants for the lower and the next upper layer, the area of contact between the lower and next upper layers being less than the area of the first material;

depositing the lower layer over first portions of the integrated circuit structure and over the first material;

depositing a dielectrical material over all of the lower layer and the first material;

etching the dielectric material over at least part of the first material using a process to which the first material is not as susceptible as the dielectric materials, and

forming the next upper layer over second portions of the integrated circuit structure and in contact with the lower layer exposed by the step of etching dielectric material.

4,436,583

SELECTIVE ETCHING METHOD OF POLYIMIDE TYPE RESIN FILM

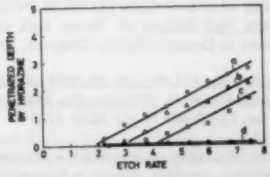
Atsushi Saiki, Koganei; Takao Iwayanagi, Nerima; Saburo Nonogaki, Meguro; Takashi Nishida, Taitou, and Seiki Harada, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 30, 1982, Ser. No. 445,576

Claims priority, application Japan, Dec. 21, 1981, 56-205326

Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*; B29C *17/08*

U.S. Cl. 156—659.1 **8 Claims**



1. A selective etching method of a polyimide type resin film,

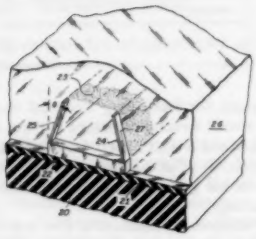
comprising forming a film made of negative type photoresist material using an unsaturated ketone polymer as a base resin on a polyimide type resin film, exposing a predetermined portion of said film, developing said film to obtain an etching mask having a predetermined pattern and etching said resin film by use of a mixed solution of 20 to 40 vol% of hydrazine hydrate and the balance of polyamine as the etching solution.

4,436,584

ANISOTROPIC PLASMA ETCHING OF SEMICONDUCTORS

Stephen E. Bernacki, Northboro, and Bernard B. Kosicki, Acton, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Mar. 21, 1983, Ser. No. 477,581
Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—643 **10 Claims**



1. A method of patterning the surface of a material, to be etched within selective regions, said regions defining sidewalls substantially normal to said surface, comprising the following steps:

providing a substrate with a planar surface,

depositing an overlying process layer with apertures corresponding with said regions, said layer having substantially vertical edges,

etching said material within a plasma environment contained within a discharge apparatus, said plasma resulting for imposition of an electrical field across a gaseous halocarbon compound betwen two electrodes, said plasma determined by an electrical power density and a total pressure, said gaseous compound chemically reacting with said plasma to form a polymer film on said processing layer and said material, said polymer film formed only on said edges and on said sidewalls, thereby lessening the lateral etch rate relative to the vertical etch rate of said surface being etched, so that said etching is substantially ideally anisotropic,

said etching step being primarily due to directional positive ion bombardment and chemical reaction with said material to be etched, etching being sufficiently selective to remove a desired thickness below said material surface while retaining a sufficient thickness of said processing layer to prevent substantial attack of the surface below portions of said processing layer which are not apertured.

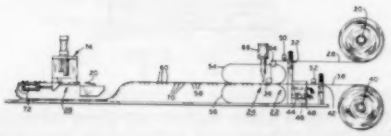
4,436,585

METHODS FOR MAKING CONNECTION INSULATORS

Eldon E. Moodie, and Richard D. Burns, both of Holland, Mich., assignors to General Electric Company, Fort Wayne, Ind.

Continuation of Ser. No. 871,681, Jan. 23, 1978, abandoned. This application Mar. 9, 1982, Ser. No. 356,591
Int. Cl.³ B65D *73/02*; B31F *1/20*
U.S. Cl. 156—73.1 **15 Claims**

1. A method of fabricating an electrical connection insulator, for a dynamoelectric machine, having a base portion established by a piece of a first sheet of electrical insulating material and a retaining portion established by a piece of a second sheet of electrical insulating material deformed in a predetermined pattern for establishing a plurality of electrical insulating compartments, said method comprising: moving a first sheet of electrical insulating material to a securing station at a first predetermined average rate of supply in a longitudinal direction; moving a second sheet of electrical insulating material to a forming station at a second predetermined average rate of supply greater than the first predetermined average rate of supply of the first sheet of insulating material and from the forming station to the securing station in a longitudinal direction; deforming the second sheet of insulating material in a predetermined pattern of partial compartments at the forming station by means of arbors to form compartment portions connected by webs extending in a direction transverse relative to the longitudinal direction of movement of the second sheet and wherein the deforming of the second sheet occurs while both the first and second sheets are undergoing movement; moving the first sheet of insulating material into a position adjacent the second sheet of insulating material at the securing



station; ultrasonically welding the first sheet of insulating material and the second sheet of insulating material and thereby securing together the webs of the first sheet of insulating material and the second sheet of insulating material to thereby establish electrical insulating compartments bounded by a base portion established by the first sheet of insulating material and by a retaining portion established by the compartment portions of the second sheet of the insulating material and also thereby trapping the arbors between the first and second sheets of material in the compartment portions; withdrawing the arbors from the compartment portions by moving the arbors laterally and transversely relative to the longitudinal direction of movement of the secured together first and second sheets of material; advancing and positioning the first sheet of insulating material and second sheet of insulating material at a cutting station; and severing the first sheet of insulating material and the second sheet of insulating material to establish an electrical connection insulator having a plurality of electrical insulating compartments.

4,436,586

METHOD OF PRODUCING KRAFT PULP USING AN ACID PREHYDROLYSIS AND PRE-EXTRACTION

Carl L. Elmore, Glen Falls, N.Y., assignor to Kamyr, Inc., Glen Falls, N.Y.

Filed Jan. 22, 1982, Ser. No. 341,627
Int. Cl.³ D21C *1/04, 1/06, 3/02*
U.S. Cl. 162—19 **20 Claims**

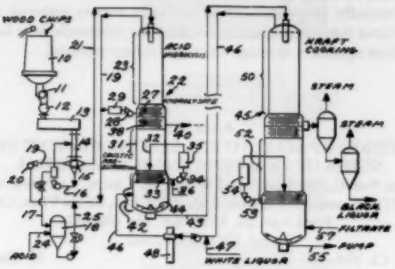
1. A method of producing carbohydrate material and kraft pulp from a liquid slurry of comminuted cellulosic fiber material comprising the steps of continuously:

(a) subjecting the liquid slurry of comminuted cellulosic fiber material to mild acid prehydrolysis, by subjecting said material to an acid concentration of, or equivalent to, about 0.2–0.5 percent H_2SO_4, and a temperature of about 120° C. or less;

(b) subjecting the slurry of prehydrolized comminuted cellulosic fiber material to mild caustic pre-extraction, by subjecting said material to a caustic concentration of, or equivalent to, about 0.5–4.0 percent NaOH, and at a temperature of about 60°–90° C.;

(c) removing hydrolysate, having carbohydrate material, released during the practice of steps (a) and (b) from the

comminuted cellulosic material while continuously practicing steps (a) and (b); and



(d) effecting kraft cooking of the prehydrolized, pre-extracted comminuted cellulosic fiber material to produce kraft pulp.

4,436,587

METHOD FOR PRODUCING MULTILAYER PAPER

Ingmar Andersson, Hammarö, Sweden, assignor to AB Karlstads Mekaniska Werkstad, Karlstad, Sweden

Filed Feb. 23, 1982, Ser. No. 351,470

Int. Cl.³ D21F *11/04*

U.S. Cl. 162—123 **5 Claims**

1. In a method for forming paper by supplying paper stock to a converging throat between two foraminous forming fabrics and dewatering and forming said stock by running said forming fabrics along a curved plain surface of a fabric supporting member with said stock therebetween, the steps of discharging into said throat at least two laterally coextensive, sheet-like jets of paper stock in superimposed, spaced apart relation with a gap therebetween, maintaining in the gap between said jets at the discharge location a wedge-shaped body of gaseous fluid at a pressure such that the adjacent faces of the jets gradually approach one another and meet to form a stratified jet as they travel towards the narrow end of said throat, and setting the discharge velocity of the jet closest to the curved plain surface to be higher than that of an adjacent discharged jet by an amount in the range up to 10% but at least 15 to 20 m/min higher.

4,436,588

PROCESS FOR DEVOLATILIZING DEVOLATILIZABLE FINE-GRAINED MATERIAL BY MEANS OF HOT, FINE-GRAINED HEAT-CARRYING MATERIAL

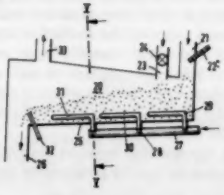
Roland Rammler, Könistein, and Alfons Bussmann, Nidderau, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 206,512, Nov. 13, 1980, abandoned. This application Apr. 19, 1982, Ser. No. 369,686

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1979, 2946102

Int. Cl.³ C10B *49/20, 53/06*

U.S. Cl. 201—12 **3 Claims**



1. A process for devolatilizing a hydrocarbon-containing fine-grained material selected from the group consisting of tar sand, oil shale, oil-containing diatomaceous earth and coal which comprises:

(A) feeding said hydrocarbon-containing fine-grained material having a grain size not in excess of 8 mm, to an agitating chamber having a horizontal or sloped bottom terminating in a discharge chute, said material being fed through a plurality of first feed conduits;

(B) introducing heat-carrying fine-grained solids having a temperature of 500° to 1000° C. and a particle size not in excess of 8 mm, to said chamber by a plurality of second feed conduits, said first and second feed conduits being arranged to form superimposed layers of said material and said solids so as to contact and to mix said solids and hydrocarbon-containing fine-grained material, thereby heating the material to temperatures of about 400° to 900° C. and devolatilizing the material;

(C) withdrawing hydrocarbon gases and vapors from said chamber;

(D) introducing a portion of said gases as sole agitating gas into the mixture of heat-carrying solids and hydrocarbon-containing material through a plurality of nozzles at different valocities, the velocity of the agitating gas introduced in a first zone adjacent to the first and second feed conduits being higher than the velocity of the gas in a succeeding second zone in the direction toward said discharge chute, the velocity of agitating gas in a third zone next preceding said discharge chute being higher than in the second zone, the velocities of the agitating gas leaving the nozzles being in the range between 10 and 60 meters per second;

(E) moving the mixture of solids in an agitated state, agitated by said agitating gas, towards said discharge chute such that the height of said solids in the agitating chamber is from 0.1 to 1.0 meter; and

(F) feeding the mixture from said discharge chute into a dwell zone, with gases and vapors being withdrawn from said dwell zone.

4,436,589

METHOD OF PRETREATING COAL FOR COKING PLANT

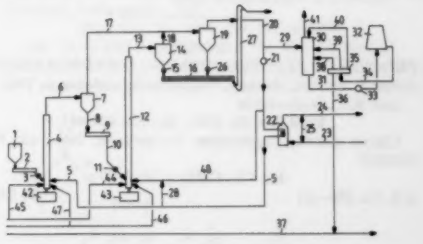
Vladan Petrovic, and Heinz Rotthaus, both of Essen, Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed May 10, 1982, Ser. No. 376,834

Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3121285

Int. Cl.³ C10B *39/02, 57/10*

U.S. Cl. 201—41 **4 Claims**



1. A method of pretreating coal for a coking plant with coal preheating and coke dry cooling, the method comprising the steps of

heating and drying coal in two stages in two throughflow dryers successively connected with one another and supplied with steam, so that in a first one of the throughflow driers the steam is supplied with a temperature of substan-

tially 600° C. and the coal is heated to a temperature substantially between 70°–90° C. and to a water content of substantially 2 weight %, whereas in a second one of the throughflow driers the steam is supplied with a temperature of substantially between 400°–500° C. and the coal is heated to a temperature of substantially 200° C. and dried to a residual water content of substantially 0–0.1 weight %;

removing dust from the steam after passing through the throughflow driers; and

heating the steam after dust removal in the heat exchange relationship with a circulating gas of a coke dry cooling operation.

4,436,590

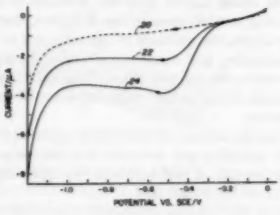
DETECTION OF NITRATE ESTERS USING SILVER ELECTRODE

Melvin H. Miles, and Dwight A. Fine, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 4, 1982, Ser. No. 432,485

Int. Cl.³ G01N *27/48*

U.S. Cl. 204—1 T 6 Claims



1. A method of detecting nitrate esters in a sample solution using a voltammetric instrument with a solid working electrode comprising the steps of:

forming a test solution by mixing a sample solution with a supporting electrolyte solution;

placing said test solution into a cell having a solid working electrode selected from the group consisting of silver, gold and copper, a counter electrode and a reference electrode;

deoxygenating said test solution;

applying a linearly varying potential over the range of −0.3 V to −1.0 V (vs. SCE) to said cell; and

recording a voltammagram with a recorder as the potential is applied whereby said nitrate esters are detected as a wave in a voltammetric scan.

4,436,591

PROCESS OF ELECTROFORMING SCREEN MATERIAL

Johan A. de Hek, Arnhem, Netherlands, assignor to Veco Beheer B.V., Netherlands

Filed Sep. 30, 1982, Ser. No. 429,447

Claims priority, application Netherlands, Nov. 13, 1981, 8105150

Int. Cl.³ C25D *1/08, 7/00*

U.S. Cl. 204—11 14 Claims

1. Process of electrolytically producing screen material by depositing a metal upon a basic screen material disposed within an electrolytic bath that includes at least one brightener, characterized in that the metal is deposited on the basic screen material by using a pulsed current whereby metal is deposited substantially perpendicular to the basic screen material and apertures through the screen material are substantially as large as those apertures through the basic screen material.

4,436,592

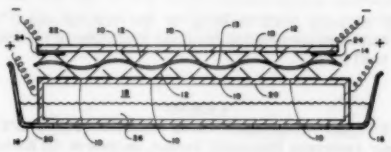
METHOD OF SELECTIVELY ELECTROPLATING THE NODES OF DIMPLED TITANIUM MATERIAL

Brian Norris, San Diego, and Robert M. Castro, La Mesa, both of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Filed Apr. 25, 1983, Ser. No. 488,351

Int. Cl.³ C25D *5/02*

U.S. Cl. 204—15 12 Claims



1. A process for electroplating the nodes of dimpled sheet material comprising the steps of:

(a) providing a flat block of electrical conductive material having at least one substantially flat surface;

(b) positioning on the flat surface of said block; a porous absorbent fabric material;

(c) wetting the porous fabric material with a electrolyte solution;

(d) placing one node surface of a cleaned dimpled sheet of material on the wetted porous fabric material;

(e) placing a sheet of conductive material on the other surface of the dimpled sheet for holding said sheet against said wetted porous fabric material;

(f) attaching electrodes to said block of electrical conductive material and to said sheet of conductive metal; and

(g) applying appropriate plating voltage to said electrodes for a predetermined period of time.

4,436,593

SELF-ALIGNED POLE TIPS

John R. Osborne, Saratoga, and Peter G. Bischoff, Cupertino, both of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Filed Jul. 13, 1981, Ser. No. 282,540

Int. Cl.³ G11B *5/42*

U.S. Cl. 204—15 29 Claims

1. A method of precisely aligning the pole tips of a thin film magnetic head comprising:

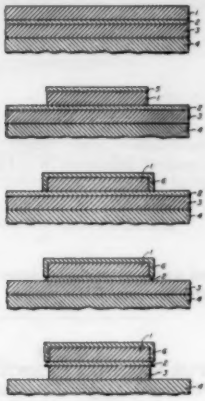
a. applying to a support, two metallic layers separated by an insulative layer, these all being superposed on one another, said metallic layers to become the pole tips of the magnetic head; a "first" one of said metallic layers being applied to said support; the insulative layer being then applied over said "first" metallic layer, and a "second" metallic layer being then applied on said insulative layer;

b. applying a photo-resist to the surface of said "second", or "top" metallic layer in imagewise configuration to establish the shape of the top pole;

c. etching the top metallic layer to the insulative layer in areas not protected by the photo-resist thus forming the top pole;

d. removing the photo-resist and encapsulating the top pole with a protective metal;

e. etching the insulative layer using the top pole as a mask; and



f. etching the "first", or "bottom" metallic layer using the top pole and insulative layer as a mask to form the bottom pole.

4,436,594

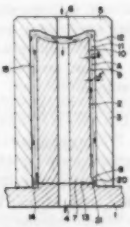
METHOD OF TREATING THE SURFACE OF A METAL CONTAINER

Yoshiaki Nishida, Kitakyushu; Shunji Yano, Sagamihara, and Tadahiro Masuyama, Ibaragi, all of Japan, assignors to Daiwa Can Company, Limited, Tokyo, Japan

Filed May 18, 1981, Ser. No. 264,539

Int. Cl.³ C25D *5/36, 5/44, 7/04, 13/20*

U.S. Cl. 204—33 **3 Claims**



1. A method of treating a surface of a seamless container made of a member selected from te group consisting of steel and aluminum, which comprises:

causing an organic solvent to flow along and on said surface to degrease said surface,

blowing compressed air on said degreased surface to remove said organic solvent from said degreased surface, and

subjecting the resultant surface to (1) electrolysis in an aqueous electrolytic fluid or (2) electrophoretic coating in an aqueous electrophoretic fluid.

4,436,595

ELECTROPLATING BATH AND METHOD

Walter T. Matson, Los Angeles, Calif., assignor to Metal Surfaces, Inc., Bell Gardens, Calif.

Continuation-in-part of Ser. No. 270,844, Jun. 5, 1981. This application Mar. 17, 1982, Ser. No. 358,862

Int. Cl.³ C25D *3/62, 5/10*

U.S. Cl. 204—40 **29 Claims**

1. An aqueous electroplating bath for depositing a gold alloy capable of being operated at current densities of up to 600 amps per square foot and into which metal impurities are introduced comprising a salt of an alloying metal selected from the group consisting of nickel, cobalt and mixtures thereof; the reaction product of an alkali metal gold cyanide with a mixture of glycolic acid and an alkali metal salt of glycolic acid which are present in amounts sufficient to complex the alkali metal gold cyanide and in a ratio sufficient to generate a pH in the bath of from about 4 to about 5 and wherein the alloying metal is present in a predetermined ratio to the gold, said bath further comprising nitrilotriacetic acid in an amount sufficient to prevent codeposition of the introduced metal impurities with the gold alloy.

23. A process for electroplating an alloy of gold and nickel onto a substrate from an aqueous gold alloy electroplating bath which comprises ionic nickel in a predetermined concentration, the reaction product of an alkali metal gold cyanide and a mixture of glycolic acid and an alkali metal salt of glycolic acid, wherein the glycolic acid and the alkali metal salt of glycolic acid are present in sufficient quantity to complex the alkali metal gold cyanide and in a ratio sufficient to provide a pH of from about 4 to about 5 comprising the steps of:

a. plating the substrate with nickel in a nickel electroplating bath;

b. electroplating the nickel plated substrate with the alloy of gold and nickel in the aqueous gold alloy electroplating bath; and

c. introducing nitrilotriacetic acid to the gold alloy electroplating bath in a concentration sufficient to complex all ionic nickel introduced to said aqueous gold plating bath from said nickel plating bath to maintain free ionic nickel in said gold alloy electroplating bath at said predetermined concentration.

4,436,596

N-SUBSTITUTED-2-(R)-(SULFINIC ACID)-3-(S)-(ACYLAMIDO)-4-OXO-AZETIDINES AND PROCESS

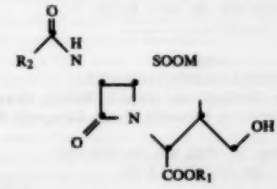
David A. Hall, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 16, 1982, Ser. No. 442,075

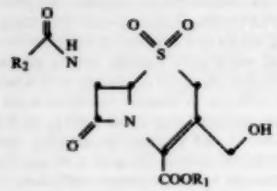
Int. Cl.³ C25C *3/00;* **C07D** *205/08, 403/12, 405/12*

U.S. Cl. 204—59 R **31 Claims**

1. A process for preparing a compound of the formula



which comprises electrolytically reducing at a potential at or above the reduction potential required for the cleavage of the sulfone to C_2 bond of a cephalosporin sulfone compound of the formula



in a solvent chosen from the group consisting of a polar organic solvent, water, and a mixture of the two, all of which are stable under the conditions of the electrolysis, and

(a) when the solvent used is a polar organic solvent or a mixture of water and a polar organic solvent, in the presence of a proton source comprised of a carboxylic acid having a pKa between about zero to about five in an amount equal to at least one molar equivalent per molar equivalent of cephalosporin sulfone; or

(b) when the solvent used is water, maintaining the pH of the aqueous solution between about three to about nine;

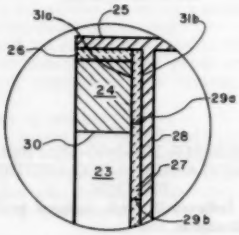
at a temperature above about the freezing point of the solvent to about 40° C.; wherein the electrolytic reduction is carried out in the presence of a catholyte selected from the group consisting of an alkali metal salt, ammonium and substituted ammonium salts.

4,436,597

METHOD AND APPARATUS FOR PRODUCING ALUMINUM IN AN ELECTROLYSIS CELL WITH QUARRY TILE LINING

Louis A. Hartley, II, New London, N.C., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 28, 1981, Ser. No. 334,896
Int. Cl.³ C25C *3/06, 3/08*
U.S. Cl. 204—67 **7 Claims**



1. In a process for the electrolytic production of aluminum, in a cell having a side wall including a layer of carbon electrically insulated from a jacket of metal, the improvement comprising interposing an upwardly extending layer of tile between the carbon layer and the metal jacket.

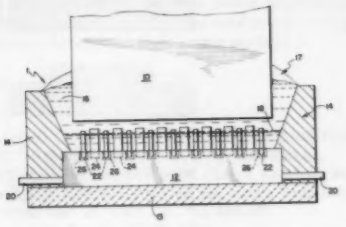
4,436,598

ALUMINA REDUCTION CELL

Alton T. Tabereaux, Sheffield, and John T. Willett, Florence, both of Ala., assignors to Reynolds Metals Company, Richmond, Va.

Filed Sep. 28, 1983, Ser. No. 536,710
Int. Cl.³ C25C *3/06*
U.S. Cl. 204—67 **9 Claims**

1. In an alumina reduction cell having an anode, a carbonaceous cathode and a plurity of refractory hard metal (RHM) shapes mounted in and extending vertically upwardly from said cathode, through a molten aluminum pad and into an alumina-cryolite bath, the improvement comprising inert refractory anode stops mounted in said cathode and extending vertically upwardly from said cathode, through said molten



aluminum pad and into said aluminum-cryolite bath for a distance greater than said RHM shapes.

4,436,599

METHOD FOR MAKING A CATHODE, AND METHOD FOR LOWERING HYDROGEN OVERVOLTAGE IN A CHLORALKALI CELL

Thomas C. Bissot, Newark, and Stephen Li, Wilmington, both of Del., assignors to E. I. Du Pont De Nemours & Company, Wilmington, Del. Corporation, New York, N.Y.

Filed Apr. 13, 1983, Ser. No. 484,557
Int. Cl.³ C25B *1/34, 11/04*
U.S. Cl. 204—98 **18 Claims**

13. A process for making an iron-activated cathode from the cathode of a chloralkali cell which comprises an anode compartment, an anode situated within said anode compartment, a cathode compartment, a cathode situated within said cathode compartment, and a cation-exchange membrane between said anode compartment and said cathode compartment, said anode compartment containing aqueous brine solution, said cathode compartment containing aqueous caustic solution, said process comprising

(a) introducing into said cathode compartment an aqueous solution containing ferrite ions, and

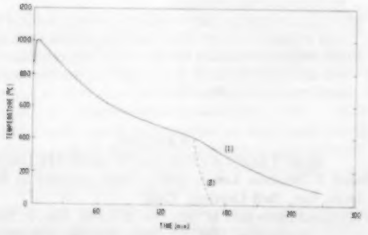
(b) passing an electrical current between said anode and said cathode until a deposit comprising iron forms on the surface of said cathode.

4,436,600

METHOD FOR TREATMENT OF COPPER ANODES TO BE ELECTROREFINED

Tatsuo Imamura, Tokyo, and Mitsuo Katoh, Ibaraki, both of Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1983, Ser. No. 478,769
Claims priority, application Japan, Mar. 25, 1982, 57-46218
Int. Cl.³ C25R *1/12*
U.S. Cl. 204—140 **7 Claims**



1. A method for preventing passivation of cast copper anodes during electrorefining, comprising the steps of:

providing copper anodes to be electrorefined;

heating the anodes to a temperature within the range of 600° C. to 1,050° C.; and

cooling the anodes at a cooling rate within a range from 20° C./hour to 400° C./hour.

4,436,601

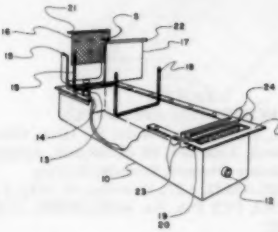
METAL REMOVAL PROCESS

Kenneth J. Branchick, Mentor; Irving Nalkin, University Hts., both of Ohio, and Mary R. Suchanski, Rochester, N.Y., assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Jul. 24, 1981, Ser. No. 286,565

Int. Cl.³ C02F *1/46*

U.S. Cl. 204—149 **11 Claims**



1. An electrolytic process for removing a significant portion of at least one metal contaminant from waste water comprising electrolyzing said waste water between a plurality of electrically energized anodes and cathodes arranged in an alternating sequence without either membrane or diaphragm separators therebetween, each of said anodes having openings therein permitting passage of such waste water therethrough and each of said cathodes being in the form of metallized organic polymer foam reticulates.

4,436,602

BLOCKING SHIELD AND METHOD FOR CONTOURING THE THICKNESS OF SPUTTER COATED LAYERS

David J. Harra, Santa Cruz; Frederick T. Turner, Sunnyvale, and Martin A. Hutchinson, Santa Clara, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Division of Ser. No. 325,588, Nov. 27, 1981, Pat. No. 4,416,759. This application Aug. 19, 1983, Ser. No. 524,708

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 R **10 Claims**

1. A method of sputter depositing an arbitrarily contoured film of a single material onto a substrate in a multi-station sputter system, comprising the steps of

sputter depositing said material onto said substrate from a cathode source in a first sputter station;

indexing said substrate to another sputter station, said substrate being shielded from deposition from completion of sputtering at said first sputter station to commencement of sputtering at said other sputter station;

sputter depositing said material onto said substrate from a cathode source in said other sputter station;

the contour of said material sputtered on said substrate at said first sputter station being different from the contour of said material sputtered on said substrate at said other sputter station; and

said difference in contour of said sputtered material being obtained by a blocking shield placed in fixed position in one of said sputter stations in between said cathode source and said substrate.

4,436,603

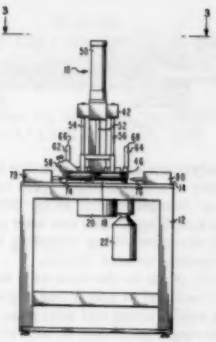
APPARATUS FOR SEPARATING A REPLICA FROM A MATRIX

John J. Prusak, and Bhupendra P. Patel, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 24, 1983, Ser. No. 507,531

Int. Cl.³ C25D *17/00*

U.S. Cl. 204—194 **6 Claims**



1. An apparatus for separating a replica of a first diameter from a surface of a matrix of a larger second diameter wherein the replica is secured to the matrix by a circumferential seal means of a predetermined diameter positioned inwardly and adjacent to the first diameter, said apparatus comprising in combination:

(a) a lower turntable rotatably mounted on a support means, said lower turntable having an outer diameter at least as large as said second diameter and having a flat central portion of a diameter of about said predetermined diameter of the seal means with the outer circumferential portion of the lower turntable being bevelled from the edge of the flat portion of the outer diameter of the lower turntable at a predetermined angle sufficient so that a matrix clamped on the flat portion can be flexed to the surface of the bevel without being permanently distorted;

(b) means for rotating said lower turntable;

(c) an upper turntable assembly comprised of an upper turntable having a flat surface and a diameter less than said first diameter; holding means for receiving and holding said upper turntable and means associated with said holding means for permitting rotation of said turntable independent of said holding means;

(d) means for raising and lowering the upper turntable means vertically in alignment with said lower turntable and for applying upward and downward force;

(e) pressure applying means for forcing the outer diameter of a matrix clamped between the upper and lower turntables into contact with the bevelled edge of the lower turntable;

(f) lower clamp means mounted on said support means in an opposing relationship to the lower turntable, said lower clamp means having the leading portions thereof bevelled to about said predetermined angle;

(g) means for advancing and retracting said lower clamp means toward and away from the lower turntable with the bevelled leading portion of the lower clamp means being aligned so as to engage in locking contact the bevelled edge of the lower turntable; and

(h) movable upper clamp means for gripping a portion of a replica extending behind the outer diameter of the upper turntable.

4,436,604

DESCALER FOR SYSTEMS EMPLOYING WATER AS A HEAT TRANSFER AGENT

Anthony J. Walters, 3305 Hazel La., Hazel Crest, Ill. 60429, and Stanford C. Nelson, Park Ridge, Ill., assignors to Anthony J. Walters, Hazel Crest, Ill.

Filed Aug. 2, 1982, Ser. No. 403,929
Int. Cl.³ C23F 13/00
U.S. Cl. 204—196 3 Claims

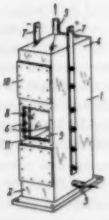
1. An electrolytic scale inhibiting device for cooling systems employing water as a heat transfer agent comprising:
- a closed heat transfer circuit along which cooling water flows and including at least one inlet pipe,
- an internally threaded fitting extending into said inlet pipe and permanently secured thereto,
- an electrolytic probe in the form of a hollow copper tube removably secured to said fitting and sealed thereto and extending axially along said inlet pipe,
- said probe having a spiral copper wire brazed to its exterior surface and extending therealong to the inner end of said probe,
- a copper end closure for the end of said probe,
- a ground wire secured to said end closure and extending along said probe through the outer wall end thereof,
- said ground wire being insulated in the region of said fitting and extending outside of said probe and having a free end outside of said heat transfer circuit connected to ground,
- sealing and insulating means mounting said probe in said fitting, comprising an insulating bushing threaded on the outer end of said probe,
- the mounting for said probe in said fitting also including an internally and externally threaded retainer threaded within said fitting and having said bushing threaded therein, said retainer having a head that can be gripped by a wrench and said sealing and insulating bushing being threaded within said retainer and cut-off flush with the outer end of said bushing when assembled to said retainer, to provide a permanent water tight insulation and sealing support between said retainer and probe.

4,436,605

BIPOLAR ELECTRODE ELECTROLYSIS APPARATUS

Radu Holca, Boulogne, France, assignor to Degremont, Rueil Malmaison, France

Filed Apr. 26, 1982, Ser. No. 372,238
Int. Cl.³ C25D 17/00; C25B 15/00, 9/02, 11/10
U.S. Cl. 204—225 13 Claims



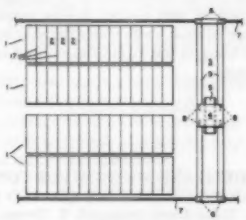
1. A bipolar electrode electrolysis apparatus, particularly for the electrolysis of saline solutions, said apparatus comprising:
- a frame formed of an electrically insulating material, said frame comprising a parallelepidedal enclosure defining therein a plurality of compartments, each said compartment having an open side through one wall of said frame;
- monopolar terminal electrodes mounted in said frame for connection to current leads;
- a plurality of bipolar electrodes; and
- means for supporting said bipolar electrodes within each said compartment and for allowing removal and insertion of said bipolar electrodes through said open side.

4,436,606

ELECTROLYSIS APPARATUS

Jean F. Vielleſont, Herenthout; Carolus M. Hens, Olen, and Hubert J. Tobback, Lichtaart, all of Belgium, assignors to Metallurgie Hoboken-Overpelt, Brussels, Belgium

PCT No. PCT/BE82/00002, § 371 Date Sep. 30, 1982, § 102(e) Date Sep. 30, 1982, PCT Pub. No. WO82/02907, PCT Pub. Date Sep. 2, 1982
PCT Filed Feb. 17, 1982, Ser. No. 432,925
Claims priority, application Luxembourg, Feb. 19, 1981, 83152
Int. Cl.³ C25D 17/08
U.S. Cl. 204—225 13 Claims



1. An electrolysis apparatus comprising
- a plurality of electrolytic cells (2) positioned side by side, each cell being adapted to contain a vertically suspended group of electrodes consisting of anodes (10) alternating with cathodes (11), these electrodes being provided at both their sides with a suspension lug (12, 16),
- support and connection means (18), positioned on the walls (17) separating the adjacent cells, for supporting the suspension lugs of the electrodes and for connecting the cells electrically, these means comprising per wall two rows (19, 20) of supports (21, 22) extending on both sides of a median element (23) of electrical connection, each row comprising supports made of an electroconductive material (21) alternating with supports made of an insulating material (22), and
- handling means (5) for introducing a group of electrodes in a cell and for withdrawing it therefrom,

characterized in that
- the supports (21, 22) dominate the median element (23) of electrical connection,
- the lugs (12, 16) of the electrodes suspended in the cells extend beyond their supports (21, 22), and
- the handling means (5) are adapted to lift the electrodes by the under-side of the extremities of their lugs (12, 16)

4,436,607
ANODE SUPERSTRUCTURE OF A FUSED SALT ELECTROLYTIC CELL AND POT ROOM FITTED OUT WITH SAME

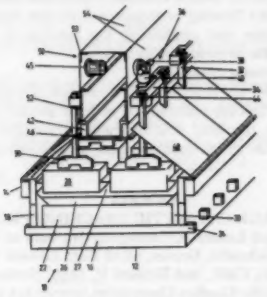
Werner K. Fischer, Venthone, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jul. 1, 1982, Ser. No. 394,115

Claims priority, application Switzerland, Jul. 14, 1981, 4598/81

Int. Cl.³ C25C *3/10, 3/22*

U.S. Cl. 204—246 **11 Claims**



1. Anode superstructure of a hooded fused salt electrolytic cell for producing aluminum which comprises anodes in said cell, spaced apart anode conductor sections communicating with said anodes and feeding electric current to said anodes, and an electrically insulated footbridge positioned between said anode conductor sections over the length of the cell accessible at least from one end of said cell wherein a housing which is open at least one end is provided over the footbridge.

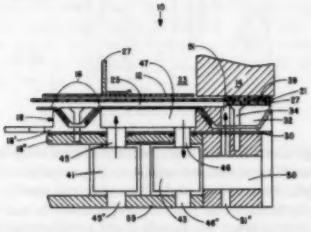
4,436,608
NARROW GAP GAS ELECTRODE ELECTROLYTIC CELL

William R. Bennett, North Olmsted, and Thomas M. Clere, Willowick, both of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Aug. 26, 1982, Ser. No. 411,895

Int. Cl.³ C25B *9/02, 11/03*

U.S. Cl. 204—265 **5 Claims**



1. In a gas-diffusion electrode type electrolytic cell having anode and cathode compartments defined by a cell separator and having a gas-diffusion electrode positioned in at least one of the compartments spaced from the separator, electrolyte within the compartment being in contact with one surface of the gas-diffusion electrode and a reactant-containing gas being in contact with the other surface of said gas-diffusion electrode, the improvement comprising an electrode frame, said frame having a channel being formed circumferentially upon the electrode frame, at least the edge portions of said gas-diffusion electrode being received in said channel, said frame including at least one retainer received in said channel and at least one fastener for securing said retainer to said electrode frame thereby retaining the gas-diffusion electrode upon the electrode frame, said frame also including integral passages for maintaining the gas adjacent to one surface of said gas-diffusion electrode, and separate integral passages for maintaining electrolyte adjacent to the other surface of said gas-diffusion electrode.

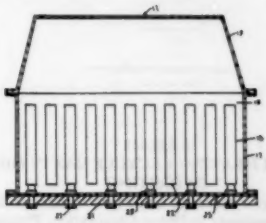
4,436,609
ELECTROLYTIC CELL HAVING AN ELASTOMERIC SHEET COVERING THE CELL BASE

Mathew G. Sobieniak, Lewiston, N.Y., assignor to J. A. Webb, Inc., Buffalo, N.Y.

Filed Mar. 17, 1983, Ser. No. 476,131

Int. Cl.³ C25B *1/16, 1/26, 9/00*

U.S. Cl. 204—267 **6 Claims**



1. In an electrolytic cell comprising a cell compartment, a conductive metal base within said compartment, a flexible heat-resistant elastomeric base sheet within the bottom portion of said compartment covering and in contact with said metal base, a plurality of anode members mounted within said compartment in electrical contact with said base member, the bottom portion of said anode members passing through said elastomeric sheet and forming a liquid-tight seal separating said base member from said cell compartment, a plurality of cathode members positioned within said compartment to facilitate the passage of electrical current through said compartment, the improvement which comprises the use of a composite, thermoplastic elastomeric base sheet fabricated of a mixture of from about 25 to about 75 percent by weight of thermoplastic polyolefin resin and from about 25 to about 75 percent by weight of rubber selected from the group of polyolefin rubber, butyl rubber, neoprene, natural rubber and mixtures thereof.

4,436,610
APPARATUS FOR MEASURING ELECTROCHEMICAL ACTIVITY

Steven E. Enzer, Brooklyn, and Robert J. Sarrine, Ann Arbor, both of Mich., assignors to Transidyne General Corporation, Ann Arbor, Mich.

Continuation of Ser. No. 216,458, Dec. 15, 1980, Pat. No. 4,397,725. This application Dec. 13, 1982, Ser. No. 449,336

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—400 **8 Claims**

1. In a device for measuring electrochemical activity of a liquid, said device having spaced indicating and reference electrodes, and means for introducing an electrolyte solution to cover the electrodes wherein said electrochemical activity is determined by the electrical properties developed between the electrodes in response to the indicating electrode being contacted with the liquid, the improvement comprising:

a generally rectangular thin walled transparent housing having a generally U-shaped hollowed out portion therein terminating in adjacent open ended trough and throat portions in an upper surface of the housing, said electrodes having tips disposed in said hollowed out portion, a break-

able ampule containing the electrolyte solution, rigid means transverse to the legs of said hollowed out portion

and located adjacent to the lower portion of the trough supporting said ampule a tape for holding the ampule in the trough.

4,436,611

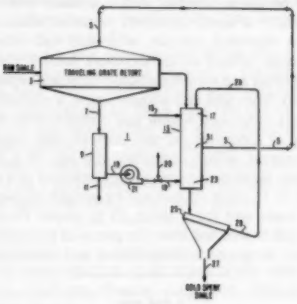
PROCESS FOR HEATING RECYCLE GAS IN OIL SHALE RETORTING

Louis H. Jaquay, Pittsburgh, and Mark Venetti, Bethel Park, both of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Jul. 1, 1983, Ser. No. 510,291

Int. Cl.³ C10G *1/02*; C10B *49/02, 53/06*

U.S. Cl. 208—11 R **10 Claims**



1. A process for heating recycle gas for the indirect retorting of oil from fresh oil shale after the oil has been removed from the recycle gas, utilizing the residual carbon in hot oil depleted shale, said process comprising the steps of:

charging hot, oil depleted shale into the top of a vertical shaft furnace for descending passage therethrough;

supplying sufficient oxygen containing gas to said vertical shaft furnace for the combustion of the residual carbon in said hot, oil depleted shale in the upper portion of said vertical shaft furnace to generate hot spent shale, combustion gases and heat energy which is absorbed by the hot spent shale;

recovering the heat energy from said hot, spent shale in the lower portion of said shaft furnace for heating said recycle gas and for cooling said spent shale; and

returning at least a portion of the cooled spent shale from the bottom of said vertical shaft furnace to the top thereof for heat absorption during the combustion of the carbon content of the oil depleted shale in order to moderate the temperature of combustion.

4,436,612

CATALYTIC REFORMING PROCESS

Soni O. Oyekan, Piscataway, N.J., and George A. Swan, Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 82,805, Oct. 9, 1979. This application Apr. 6, 1983, Ser. No. 482,515

Int. Cl.³ C10G *35/06*

U.S. Cl. 208—65 **15 Claims**

1. In a process for improving the octane quality of a naphtha in a reforming unit comprised of a plurality of serially connected reactors, inclusive of one or more lead reactors and a tail reactor, each of which contains a platinum-rhenium catalyst, the naphtha flowing in sequence from one reactor of the series to another and contacting the catalyst at reforming conditions in the presence of hydrogen,

the improvement comprising,

providing the tail reactor with a catalyst having a weight ratio of rhenium:platinum of at least about 1.5:1, while providing the lead reactors with a catalyst having a weight ratio of rhenium:platinum of up to about 1.2:1.

4,436,613

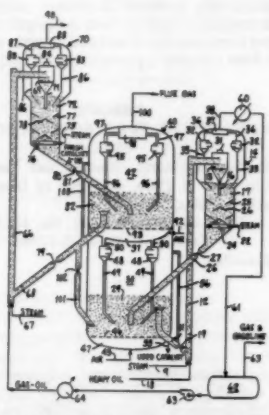
TWO STAGE CATALYTIC CRACKING PROCESS

Scott M. Sayles; Leonce F. Castagnos, Jr., both of Nederland; Charles H. Schrader, Groves, all of Tex.; Edward W. Dillingham, Ontario, Calif., and Richard P. Scott, deceased, late of Groves, Tex. (by Candice Chord Scott, executrix), assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 3, 1982, Ser. No. 446,812

Int. Cl.³ C10G *51/02*; B01J *8/26, 8/28*

U.S. Cl. 208—74 **15 Claims**



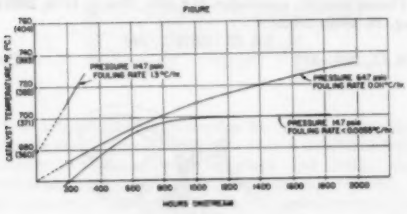
1. In a process for the fluid catalytic cracking of heavy hydrocarbon feedstocks containing catalyst poisons wherein spent catalyst from said catalytic cracking reaction is stripped of volatile hydrocarbons prior to regeneration and stripped catalyst is regenerated by burning coke therefrom with an oxygen-containing gas, the improvement which comprises contacting said heavy hydrocarbon feedstock in a first fluidized catalytic cracking reaction zone with a zeolite type cracking catalyst having a substantial but relatively low catalytic cracking activity as compared with fresh catalyst, passing stripped catalyst from said first reaction zone to a first dense phase fluidized bed catalyst regeneration zone of a catalyst regeneration system comprising multiple catalyst regeneration zones, recovering a gas oil fraction from products of reaction of said first reaction zone, and contacting said gas oil fraction in a second fluidized catalytic cracking zone with a zeolite type cracking catalyst of relatively high catalytic activity as compared with the catalyst in said first reaction zone, passing

stripped catalyst from said second cracking zone to a second dense phase fluidized bed catalyst regeneration zone, supplying sufficient oxygen-containing regeneration gas to said regeneration zones to provide an excess of oxygen over that required for complete combustion of coke to carbon dioxide, discharging flue gases substantially free from carbon monoxide from said regeneration zones, adding fresh catalyst to said catalyst regenerated in said second regeneration zone, withdrawing used catalyst from said second regeneration zone and introducing said used catalyst into said first regeneration zone as the source of catalyst therefor, and discharging used catalyst from said first regeneration zone.

4,436,614
PROCESS FOR DEWAXING AND DESULFURIZING OILS

Hazel C. Olbrich, Rodeo; Dennis J. O'Rear, Petaluma, and John A. Zakarian, Richmond, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Oct. 8, 1982, Ser. No. 433,620
Int. Cl.³ C10G *45/02, 65/12*
U.S. Cl. 208—89 **7 Claims**



1. A process for treating hydrocarbon containing feeds in a single reaction vessel, comprising:

(a) contacting in a desulfurizing reaction zone a hydrocarbonaceous feed boiling from about 35° C. to 650° C. with a desulfurizing catalyst under desulfurizing conditions which comprise a hydrocarbon partial pressure above about 30 psia;

(b) mixing the effluent of said desulfurizing reaction zone with a diluent to form an effluent and diluent gas mixture; and

(c) contacting said desulfurizing zone effluent and diluent gas mixture with a nonhydrogenating dewaxing catalyst, which comprises an intermediate pore size molecular sieve, under dewaxing conditions, which comprise a hydrocarbon partial pressure in said mixture of less than about 30 psia.

4,436,615
PROCESS FOR REMOVING SOLIDS FROM COAL TAR

Norman S. Boodman, Penn Hills Township, Allegheny County; Elvin L. Farr, Greensburg; Robert J. Osterholm, Murrysville, all of Pa., and Neulan B. Green, III, Birmingham, Ala., assignors to United States Steel Corporation, Pittsburgh, Pa.

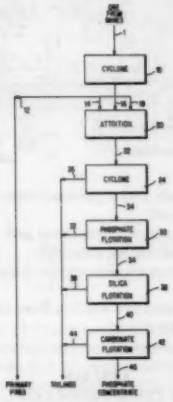
Filed May 9, 1983, Ser. No. 493,118
Int. Cl.³ C10C *1/00*; C10G *31/00, 31/09, 31/10*
U.S. Cl. 208—177 **28 Claims**

1. A process for removing solids from coal tar for the preparation of a coal tar pitch containing liquid comprising (1) centrifuging said coal tar at a suitable viscosity to separate large particle size solids and liquid fraction from a first liquid fraction containing pitch and small particle size solids, and (2) filtering said large particle size solids and liquid fraction while maintaining said fraction at a suitable viscosity to thereby produce a second pitch containing liquid fraction which is substantially free of solids, and a densified readily handleable large particle size solid material.

4,436,616
PROCESS FOR THE BENEFICIATION OF PHOSPHATE ORES

Philippe Dufour, Les Hauts-Bouleaux, 30740 Saint-Laurent Le Minier; Jean-Jacques Predali, 2, rue de Blanquefort, 78310 Elancourt, both of France; Guy Ranchin, deceased, late of Versailles, France; by Marc Ranchin, legal heir, and by Genevieve Ranchin, legal heir, both of 16 rue Albert Joly, Versailles, France

Continuation-in-part of Ser. No. 204,520, Nov. 6, 1980, abandoned. This application Mar. 30, 1982, Ser. No. 363,652
Int. Cl.³ B03D *1/06*
U.S. Cl. 209—3 **28 Claims**



1. A process for the beneficiation of phosphate ore containing a magnesia-rich carbonate-containing gangue and a silica-containing gangue comprising:

(a) washing and classifying the phosphate ore to form a first fraction comprising primary fines and removing the primary fines from the phosphate ore;

(b) subjecting the phosphate ore to controlled attrition during a period of not less than 5 minutes to remove at least a portion of the magnesia-rich carbonate-containing gangue from the phosphate ore particles;

(c) separating the particles resulting from (b) into a fine and a coarse fraction; and

(d) subjecting the coarse fraction obtained in (c) to a plurality of froth flotations to remove the remaining magnesia-rich carbonate-containing gangue and the silica-containing gangue and to recover a concentrated phosphate product, said froth flotations including a phosphate flotation, a silica flotation and an anionic carbonate flotation.

4,436,617
FROTH FLOTATION ORE BENEFICIATION PROCESS UTILIZING ENHANCED GASIFICATION AND FLOW TECHNIQUES

Wiley I. Moore, Glenolden, and Ronald L. Tassoni, Milmont Park, both of Pa., assignors to Cocal, Inc., Holmes, Pa.

Filed Jul. 22, 1982, Ser. No. 401,009
Int. Cl.³ B03B *1/00*
U.S. Cl. 209—3 **32 Claims**

15. A method of beneficiating ores, comprising the steps of:

classifying said ore to a predetermined size range;

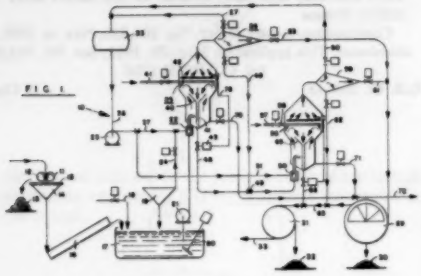
mixing said classified ore with a frothing agent to form a slurry;

flowing said slurry through a mixing chamber;

injecting gas under pressure into said slurry in said mixing chamber to form a gasified slurry;

establishing in a closed vessel a fluid medium at a predetermined operating level;

expelling said gasified slurry into said fluid medium below said level for percolating through the medium and causing a first ore fraction to froth on the surface of the medium;
collecting in an underflow siphon located below the surface of the medium a second ore fraction tending to sink in the fluid medium;
withdrawing said froth from said vessel;



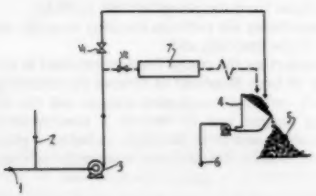
separating said froth into a gaseous component and a non-gaseous component:
compressing said gaseous component and reinjecting it into said slurry in said mixing chamber;
separating said non-gaseous component into ore solids and a liquid; and
exhausting said second ore fraction from said vessel through said underflow siphon.

4,436,618

RECOVERY OF COAL FROM COAL HANDLING OPERATIONS

Geoffrey R. Rigby, Charlestown, and Thomas G. Callcott, Mayfield, both of Australia, assignors to The Broken Hill Proprietary Company Limited, Melbourne, Australia

Continuation-in-part of Ser. No. 127,107, Mar. 4, 1980, abandoned. This application Jan. 19, 1982, Ser. No. 340,779
Claims priority, application Australia, Mar. 5, 1979, PD7887
Int. Cl.³ B03D *3/06*
U.S. Cl. 209—5 **13 Claims**



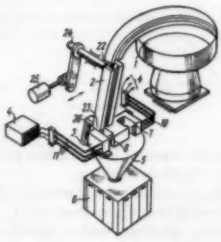
8. A system for recovering coal in the form of pellets from a particulate coal bearing slurry comprising (a) a pipeline for carrying the slurry; (b) a centrifugal turbulent flow slurry pump having a pumping chamber connected to said pipeline for pumping said slurry; (c) feed means for introducing an appropriate hydrophobic liquid to the pumping chamber of said pump simultaneously with the introduction of said slurry into said pumping chamber in a metered quantity sufficient to achieve substantially intimate contact between the hydrophobic liquid and the coal particles in said slurry, said pump means and said feed means co-operating to pass said slurry and said hydrophobic liquid through said pump in a single pass and to subject the coal particles to extreme turbulence within the pumping chamber to rapidly coat the coal particles with the hydrophobic liquid and to repeatedly bring the coal particles into contact with other coal particles in the pumping chamber to agglomerate and pelletize the coal particles in the pumping chamber; and (d) separating means for separating the pelletized coal particles from said slurry upon discharge from said pump whereby the time taken for the recovery of the coal from said slurry is substantially reduced.

4,436,619

METHOD OF SORTING SEMICONDUCTOR DEVICES AND APPARATUS FOR PERFORMING THIS METHOD

Lev N. Petrov, Leninsky prospekt, 153, kv. 35; Viktor A. Adoniev, ulitsa Starykh bolshevikov, 98, kv. 51, and Valery I. Kononov, Leninsky prospekt, 151, kv. 18, all of Voronezh, U.S.S.R.

Filed Aug. 11, 1981, Ser. No. 291,956
Claims priority, application U.S.S.R., Jun. 6, 1978, 2639123; Aug. 28, 1980, 2980518
Int. Cl.³ B07C *5/344*
U.S. Cl. 209—573 **3 Claims**



1. An apparatus for sorting semiconductor devices, comprising:
means for loading semiconductor devices having an outlet portion with a receiving end and a delivery end;
a contact mechanism adjoining said loading means, underlying said outlet portion, and having two slots for receiving semiconductor devices from said delivery end of said outlet portion, each of said slots having a outlet;
means for oscillating said outlet portion so that the delivery end is moved between a first limit position aligned with one of said slots and a second limit position aligned with a second of said slots;
abutment means carried by said delivery end of said outlet portion of said loading means for alternatingly closing said outlets of said slots during movement of said outlet portion of said loading means;
said contact mechanism having contact elements associated with each of said slots;
means for moving said contact elements into and out of engagement with leads of semiconductor devices loaded into said slots;
means for measuring the electric parameters of semiconductor devices electrically connected to said contact elements of said contact mechanism;
receptacles for receiving semiconductor devices; and
conveying means underlying said contact mechanism for receiving semiconductor devices from said slots and for sorting out semiconductor devices into respective ones of said receptacles.

4,436,620

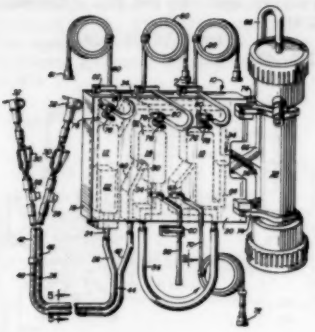
INTEGRAL HYDRAULIC CIRCUIT FOR HEMODIALYSIS APPARATUS

Marc Bellotti, Winnetka; Richard P. Goldhaber, Libertyville; Earl G. Phillips, Barrington, and Theodore H. Toch, Streamwood, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 794,755, May 19, 1977, abandoned. This application Jul. 13, 1979, Ser. No. 57,387

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—90 **16 Claims**



1. In a hydraulic circuit member for use with a membrane diffusion device, which comprises a unitary member defining a plurality of blood-receiving chambers, and conduit means communicating between said blood-receiving chambers, for directing, receiving, and processing blood passing through said membrane diffusion device, in which at least one of said blood receiving chambers defines a transversely-enlarged upper chamber portion connected by a step wall which abruptly narrows the bottom end of said enlarged chamber area to a lower chamber portion of lesser transverse dimension, and points of communication of said conduit means with said chamber, including an inlet spaced from the bottom of said chamber and communicating directly with said enlarged upper chamber portion in an upwardly-pointing direction through said step wall, and an outlet positioned adjacent the end of said lower portion remote from said enlarged, upper portion of said chamber, said chamber defining vent means for gases at its upper end and constituting an improved bubble trap for blood when blood is introduced through said inlet and withdrawn through said outlet.

4,436,621

PRESSURE VESSEL HAVING A PLURALITY OF FILTERING ELEMENTS

Charles W. Picker, West Bloomfield, Mich., assignor to Oakland Products, Inc., Pontiac, Mich.

Filed Aug. 9, 1982, Ser. No. 406,188

Int. Cl.³ B01D *29/26, 35/16*

U.S. Cl. 210—232 **3 Claims**

1. In a filter of the type comprising:

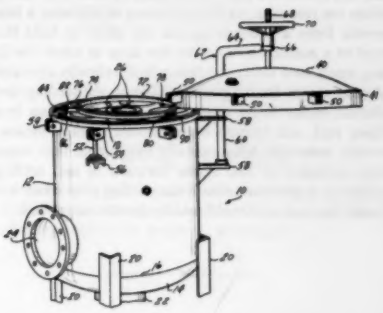
a housing having side and bottom walls and a top wall spaced from said bottom wall, said housing having a liquid outlet, sid housing top wall having at least two spaced openings formed therein;

removable, bag-shaped filtering means for straining a liquid having an open upper end fitted into each top wall opening, each filtering means being supported by said top wall at its open end and projecting into the interior of said housing below said top wall;

a removable cover enclosing said filter housing, the interior of said cover defining a flow passage communicating with each filtering means open end; and

a liquid inlet in communication with said interior of said cover, the improvement comprising:

hold-down means pivotally carried by said housing top wall and movable between a first lowered position wherein said hold-down means overlays a portion of each filtering means to retain said filtering means within said housing top wall openings and a second raised position subsequent to the removal of said cover from said housing wherein said hold-down means is pivoted with respect to said housing top wall to a position spaced from said filtering means to effect removal of said filtering means; the hold-down means including:



a ring member pivotally mounted to said top wall such that said ring member may be pivoted with respect to said top wall from said first lowered position to said second raised position, said ring member overlaying said filtering means when in said second lowered position; and

clamping means secured to said top wall for clamping a portion of said ring member to said top wall at a point angularly spaced from the point of pivotable movement for said ring member when said ring member is in said second lowered position.

4,436,622

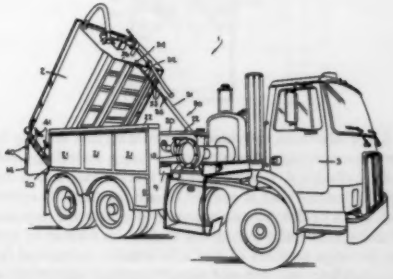
EDUCTOR TRUCK

Anthony V. Petretti, Whitestone, N.Y., assignor to Metro Hoist & Body Co., Inc., Whitestone, N.Y.

Division of Ser. No. 40,551, May 21, 1979, Pat. No. 4,389,314. This application Mar. 24, 1983, Ser. No. 478,356

Int. Cl.³ B01D *21/00;* **C02C** *1/18*

U.S. Cl. 210—232 **1 Claim**



1. An eductor truck comprising a frame, a settling tank pivotally mounted on said frame, said settling tank having an eductor unit thereon, storage unit means mounted on said frame on each side of said settling tank, means for lifting said settling tank relative to said frame and between said storage means whereby the storage means will not interfere with said

lifting operation, said lifting means comprising hydraulic means mounted beneath said settling tank and between said storage means, a walkway located above each of said storage means, a control valve mounted on said settling tank for operating said eductor unit, said control valve being operable from a point remote from its position on the settling tank, a hydraulic motor mounted adjacent the settling tank to operate the control valve, the hydraulic motor being remotely controlled, said settling tank having a rear door which is pivotally mounted to open, holding devices mounted around the door to hold the door closed and releasable latch means being provided to prevent the door from being opened after the holding devices are removed, said latch means comprising a latch arm movable from a position against the door to hold the door closed to a position away from the door to allow the door to swing open, said latch arm being hydraulically operated by a hydraulic motor from a position beneath the settling tank, said hydraulic motor being mounted on and depending from said settling tank and located between said storage means and a pivotally mounted, telescopically extendable tank supporting means mounted on said frame forward of said settling tank movable to a position beneath the settling tank when it is tilted to hold the tank up should said hydraulic motor fail.

4,436,623

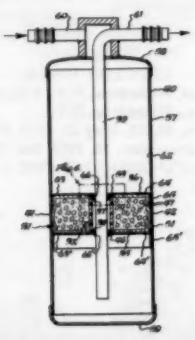
ADSORBENT CARTRIDGE

John S. Cullen, Buffalo; Samuel A. Incorvia, and James A. Vogt, both of Tonawanda, all of N.Y., assignors to Multiform Desiccants, Inc., Buffalo, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,756

Int. Cl.³ B01D *27/08*

U.S. Cl. 210—282 **21 Claims**



1. An adsorbent cartridge for mounting in a housing having a wall comprising a flexible porous casing including a substantially cylindrical flexible porous fabric wall and a flexible porous first end wall at one end of said substantially cylindrical wall and a flexible porous second end wall at the opposite end of said substantially cylindrical wall, a rim formed by combining the edge portions of said substantially cylindrical flexible porous fabric wall and said second end wall, adsorbent in said casing, said rim extending radially outwardly from said substantially cylindrical wall to provide a seal with said wall of said housing, and said substantially cylindrical flexible porous fabric wall being adapted to bulge outwardly into engagement with said wall of said housing to provide a seal therewith when opposing forces are applied toward each other on said first and second end walls.

4,436,624

CRT METHOD OF CONVERTING AND SEPARATING SUBSTANCES CONTAINED, DISSOLVED OR DISSOLVABLE IN A CARRIER LIQUID

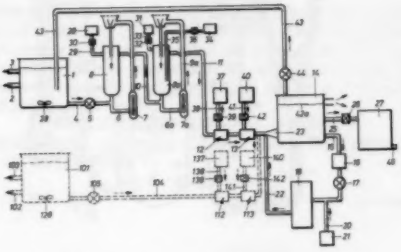
Eberhard Kreuzburg, Mölln; Dietrich J. Von Der Pahle, Bonn; Rolf Monsheimer; Ernst Pfleiderer, both of Darmstadt, and Tilman Taeger, Griesheim, all of Fed. Rep. of Germany, assignors to Universal Gesellschaft für Umwelttechnik mbH, Mölln and Röhm GmbH, Darmstadt, both of, Fed. Rep. of Germany

Filed Mar. 24, 1981, Ser. No. 246,933

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1980, 3011844

Int. Cl.³ C02F *1/24*

U.S. Cl. 210—632 **4 Claims**



1. A method of recovering a high molecular weight material from water containing a dissolved proteinaceous substance, said method comprising the steps of:

(a) circulating the water containing said substance through a first jet immersion reactor in which the water containing the substance is forced through a small cross-section passage into a vessel containing the water and the substance, and of larger cross section, the circulation being effected with a two-phase pump having a suction side connected to said vessel and a discharge side connected to said passage, thereby breaking down molecules of said substance;

(b) passing water from said vessel containing said substance in a dissolved and broken-down state into a second two-phase pump and circulating it through a second jet immersion reactor having a respective passage communicating with the discharge side of said second pump and opening into a vessel of larger cross section containing liquid and communicating with the suction side of said second pump, thereby causing the frothing of the broken-down substance in said liquid;

(c) adding enzymes to at least one of said reactors for promoting the breakdown of said substance therein;

(d) adding a flocculating agent to at least said second reactor for promoting the separation of broken-down substances from said liquid; and

(e) separating the broken-down substance from the liquid of said second reaction by flotation.

4,436,625

METHOD FOR PURIFICATION OF CRESIDINE SULFONIC ACID BY SOLVENT EXTRACTION

Henry M. Grotta, Delaware, and Perry J. Gaughan, Columbus, both of Ohio, assignors to Buffalo Color Corp., West Paterson, N.J.

Filed Nov. 9, 1981, Ser. No. 319,607

Int. Cl.³ B01D *11/04*

U.S. Cl. 210—634 **16 Claims**

1. A method for removing residual cresidine from impure p-cresidine sulfonic acid which impure p-cresidine sulfonic acid contains from above about 2 parts per billion to about 1500 parts per million of cresidine, said method comprising contacting an aqueous solution of the impure p-cresidine sulfonic acid

with sufficient liquid hydrocarbon of from five to eighteen carbon atoms for a sufficient time to extract the cresidine from the p-cresidine sulfonic acid to a concentration of less than two parts per billion of cresidine in the p-cresidine sulfonic acid.

4,436,626
CAPILLARY DIAPHRAGMS FOR USE IN DIAFILTRATION

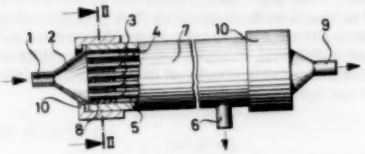
Roland Schnabel, Hofheim, Fed. Rep. of Germany, assignor to JENAer Glaswerk Schott & Gen., Fed. Rep. of Germany

Continuation of Ser. No. 970,795, Dec. 18, 1978, abandoned. This application May 14, 1982, Ser. No. 378,187

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757673

Int. Cl.³ B01D *13/00*

U.S. Cl. 210—652 **3 Claims**



1. A method of treating blood comprising providing a device having a housing with an inlet, a first outlet and a second outlet, a plurality of capillary diaphragms of porous glass material having means for preventing coagulation of blood, said means for preventing coagulation comprising a chemical surface modification of the glass material with molecules comprising a radical selected from a group consisting of silanol, silanes and hydrosilicons in combination with a functional group being selected from a group consisting of —CH_3, —CN, —OH, —SO_3H, —NH_2, —$N^{(+)}R_3$, —NO_2, —COOR,

—COOH, —SH, —NO and —NC, and means for sealing the diaphragms in the housing so that a portion of the blood entering through the inlet and not passing through the diaphragms leaves the housing through the first outlet while a portion passing through the diaphragms exits the housing through the second outlet, introducing blood at the inlet and removing portions from each of the first and second outlets so that the blood is treated without any coagulation occurring.

4,436,627
MAGNETIC REMOVAL OF IMPURITIES FROM MOLTEN SALT BATHS

Matthew J. McMonigle, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed May 10, 1982, Ser. No. 376,588

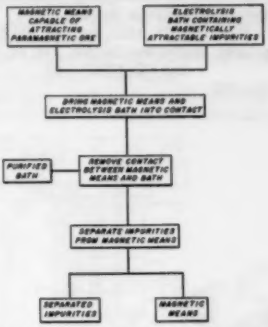
Int. Cl.³ B01D *35/06*

U.S. Cl. 210—695 **2 Claims**

1. A process for removing ferromagnetic impurities from a molten salt bath used for electrolytic reduction of metal salt which comprises:

(a) encasing in a magnetically transparent quartz material, electromagnetic means capable of attracting said ferromagnetic impurities;

(b) contacting said molten salt bath with said encased electromagnetic means to cause said impurites to be attracted to said electromagnetic means; and


MAGNETIC MEANS CAPABLE OF ATTRACTING PARAMAGNETIC ORE
ELECTROLYSIS BATH CONTAINING MAGNETICALLY ATTRACTABLE IMPURITIES
BRING MAGNETIC MEANS AND ELECTROLYSIS BATH INTO CONTACT
PURIFIED BATH
REMOVE CONTACT BETWEEN MAGNETIC MEANS AND BATH
SEPARATE IMPURITIES FROM MAGNETIC MEANS
SEPARATED IMPURITIES
MAGNETIC MEANS

(c) withdrawing from contact with said molten salt bath said encased electromagnetic means having said impurities clinging thereto by magnetic attraction.

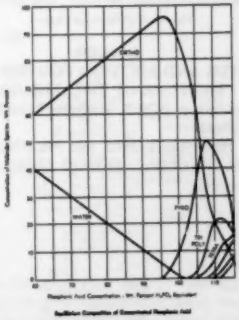
4,436,628
POLYPHOSPHORIC ACID AS A SCALE AND CORROSION INHIBITOR

Paul H. Ralston, Bethel Park, and Sandra L. Whitney, North Fayette Township, Oakdale County, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 408,335, Aug. 16, 1982, abandoned. This application Sep. 20, 1982, Ser. No. 419,868

Int. Cl.³ C02F *5/08*

U.S. Cl. 210—697 **2 Claims**

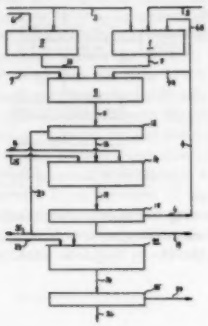


1. A process for the inhibition of scale and corrosion formation in an aqueous system containing calcium, carbonate, and bicarbonate ions, comprising adding to the system about 0.1 to 100 ppm, by weight, based on the total aqueous content of said system, of about 110 to 115% neutralized polyphosphoric acid prepared by adding 110 to 115% polyphosphoric acid to an alkaline medium selected from the group consisting of sodium hydroxide and potassium hydroxide.

4,436,629
METHOD FOR RECOVERING USEFUL PRODUCTS FROM WASTE PRODUCTS OBTAINED WHEN MANUFACTURING ALUMINIUM FLUORIDE

Lennart H. A. Berglund, Helsingborg, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed Dec. 21, 1981, Ser. No. 333,024
Claims priority, application Sweden, Jan. 16, 1981, 8100218
Int. Cl.³ C02F 1/60
U.S. Cl. 210—712 9 Claims



1. A method for recovering useable products from waste products produced in the manufacture of aluminum fluoride from aluminum hydroxide and fluorosilicic acid, which comprises the steps of

(a) preparing a first solution by dissolving silica precipitate produced in the manufacture of aluminum fluoride in a strongly basic hydroxide;

(b) preparing a second solution by dissolving aluminum hydroxide with a strongly basic hydroxide;

(c) combining solutions (a) and (b) with waste mother liquor from the manufacture of aluminum fluoride, the proportions of solution (a), solution (b) and waste mother liquor being such that the pH value of the mixture lies between about 10 and 14, whereupon the silica content of the waste products is precipitated as a silicoaluminate;

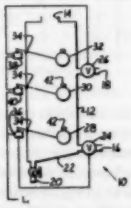
and

(d) separating the precipitated silicoaluminate and recovering a clarified residue solution.

4,436,630
APPARATUS AND METHOD FOR SEPARATING A MIXTURE OF TWO LIQUIDS

Edward M. Anderson, 2620 E. Medicine Lake Blvd., Minneapolis, Minn. 55441

Filed May 3, 1982, Ser. No. 374,344
Int. Cl.³ C02F 1/40; B01D 12/00, 21/24
U.S. Cl. 210—744 10 Claims



1. Apparatus for physically separating a mixture of two liquids, a first of the liquids being less dense than a second and more dense liquid, said apparatus comprising

(a) an upright liquid container;

(b) a liquid inlet into the container for introduction of the mixture into the container;

(c) a lower liquid outlet adjacent the bottom of the container for passing the more dense liquid from the container;

(d) a low float in the container and at an elevational level above the level of the lower outlet;

(e) means in said lower outlet and operatively connected to said low float for controlling flow through said outlet;

(f) an upper liquid outlet from the container, said upper outlet being at an elevational level above the elevational level of the low float;

(g) a second float in the container and at an elevational level between the low float and the upper liquid outlet, said low and second floats being of similar specific gravities which are more dense than the first liquid but less dense than the second liquid; and

(h) means in said upper outlet operatively connected only to said second float for controlling flow only through said upper outlet and being independent of flow control in the lower outlet, said second float and upper outlet flow control means being connected in parallel with said low float and lower outlet flow control means.

4,436,631
MULTIPLE PARTICLE WASHING SYSTEM AND METHOD OF USE

Henry A. Graham, Jr., Annandale; Johnna B. Hawk, Rocky Hill, and Rosemary K. Chachowski, Manville, all of N.J., assignors to Ortho Diagnostic Systems Inc., Raritan, N.J.

Continuation-in-part of Ser. No. 290,267, Aug. 5, 1981. This application Sep. 29, 1982, Ser. No. 427,022
The portion of the term of this patent subsequent to Mar. 6, 2001, has been disclaimed.
Int. Cl.³ B01D 21/26
U.S. Cl. 210—772 5 Claims

1. A method for washing and collecting particles having a particular density or sedimentation rate from a population of particles and contained in a first fluid for use with a system comprising 1) an outer centrifuge tube having an open top end and a closed bottom end for containing a wash solution and 2) an inner tube, insertable into said outer tube, said inner tube forming a chamber for receiving fluids and having an upper portion with a first diameter and a lower portion with a second diameter smaller than said first diameter but sufficiently large so that substantially all fluids placed in said chamber will freely flow therethrough solely on the basis of normal gravitational forces, said chamber being funnel shaped between said first and second diameters whereby a smoothly decreasing wall diameter is formed from said first to said second diameters, said method comprising the steps of:

placing in said outer tube a wash solution having a density at the minimum substantially equal to that of the first fluid and intermediate the density of at least two different particles contained in the first fluid;

inserting said inner tube into said outer tube containing the

wash solution whereby the wash solution level rises to be a level within the inner tube;

layering said first fluid containing the particles to be washed and collected in said inner tube chamber on top of said wash solution thereby forming an interface in said inner tube and a centrifuge combination;

centrifuging said centrifuge tube combination for moving at least one of the different particles through said wash solution to a level where the density of said second fluid is substantially the same as that of the particles; and

if said particles have moved out of said inner tube, removing said inner tube, the first fluid and the second fluid as required whereby the desired particles are obtained; or

if said desired particles are contained within said inner tube, removing said inner tube with said first and second fluids contained therein and dispensing said first and second fluids whereby the desired particles are obtained.

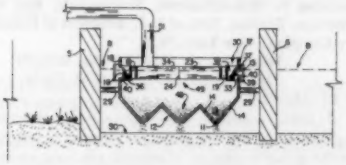
4,436,632
CLARIFIER SKIMMER

Harold J. Beard, P.O. Box 3838, Baton Rouge, La. 70821

Continuation-in-part of Ser. No. 370,802, Apr. 22, 1982, Pat. No. 4,383,922, which is a continuation-in-part of Ser. No. 316,112, Oct. 29, 1981, Pat. No. 4,362,625. This application May 16, 1983, Ser. No. 494,641

Int. Cl.³ B01D *21/00*

U.S. Cl. 210—776 **2 Claims**



1. A process for clarifying a waste water stream comprising:

(a) circuitously flowing said waste water stream in an oxidation ditch having an elongated clarifier positioned therein with its front section heading into the flow of said waste water stream and positioned to decrease the cross-sectional area of said waste water stream in said oxidation ditch where said clarifier is located,

(b) diverting a portion of said waste water stream into said clarifier,

(c) causing said portion to flow at a rate and distance sufficient to generate said portion into a clarified phase and a sludge phase,

(d) causing a surface section of said portion to strike a baffle means extending between the sides of said clarifier wherein said clarifier has ports in its sidewalls to allow surface fluids to flow out of said clarifier, said baffle means being positioned to divert said surface section toward said ports,

(e) removing said sludge phase from said clarifier, and

(f) removing said clarified phase from said clarifier.

4,436,633
FILTRATION THICKENING METHOD AND APPARATUS

Eli I. Robinsky, 66 Lytton Blvd., Toronto, Ontario M4R 1L3, and David H. Laing, 16A Heary St., Toronto, Ontario M5T 1X1, both of Canada

Filed Aug. 14, 1981, Ser. No. 292,737

Int. Cl.³ B01D *29/16, 29/32, 29/38*

U.S. Cl. 210—791 **21 Claims**

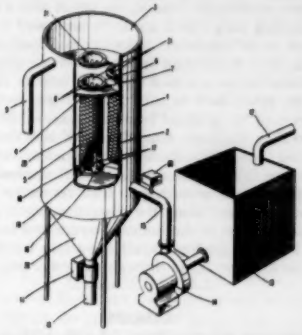
14. A process for filtering a liquid-solids suspension comprising:

passing a liquid portion of the suspension through a filter cloth by means of a pressure differential between the front side and rear side of the filter cloth such that the liquid portion of the suspension flows through said filter cloth to become filtrate and a solids portion of the suspension collects on said filter cloth as filter cake, said cloth having liquid impermeable zones;

maintaining said filter cloth in a predetermined position during said passing step;

intermittently backwashing the liquid portion in a reverse direction through said filter cloth;

allowing said filter cloth to be displaced away from said predetermined position during said backwashing step;



collecting the solids portion from said front side of the filter cloth on an accumulator grating thereby clearing the solids portion deposited on the front side of the filter cloth,

and

subsequently passing a liquid portion of the suspension again through the filter cloth with said liquid portion flowing through the portion of said grating which overlies said liquid impermeable zones without dislodging filter cake on said grating.

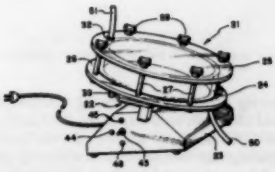
4,436,634
METHOD AND APPARATUS FOR SEPARATING CELLS BY SEDIMENTATION VELOCITY

John R. Wells, Los Angeles County, Calif., assignor to Wescor, Inc., Logan, Utah

Filed Apr. 1, 1981, Ser. No. 249,816

Int. Cl.³ B01D *21/24*

U.S. Cl. 210—800 **16 Claims**



1. Apparatus for separating cells of differing sedimentation velocities, comprising a closed separation vessel having an open and unobstructed interior and adapted to be mounted for tilting from and back to horizontal position; a relatively very small lower port located at the lowermost level of the interior of said vessel when said vessel is in its tilted position; a similar upper port located at the uppermost level of the interior of said vessel when said vessel is in its tilted position, the opening of at least the lower port into the interior of the vessel being offset from the interior of the vessel; and flow distributing means having flow distributing structure located between the lower

port and the interior of the vessel and offset from the interior of the vessel for fanning out and decreasing the velocity of the incoming flow and thereby reducing the tendency of incoming liquid to disturb isodense layers of liquid contained in the vessel.

16. A method for separating cells of differing sedimentation velocities, comprising the steps of tilting from horizontal position a separation vessel constructed in accordance with claim **1**; introducing a density gradient liquid through the lower port and distributing its flow by means of a baffle or expansion chamber or both before and as it enters the interior of the vessel; filling the vessel with said gradient liquid until flow out of the upper port begins; loading the vessel with a cell suspension containing cells which are to be separated according to differences in sedimentation velocity, said loading being by way of the flow distributing means so said cell suspension will be distributed before and as it enters the interior of the vessel; moving the vessel back to horizontal position so that the isodense layers of the gradient liquid decrease in thickness with respect to their thickness when the vessel is in the tilted position; leaving the vessel in the horizontal position for a sufficient period of time to allow the cells in the cell suspension to separate on the gradient according to their respective sedimentation velocities; again tilting the separation vessel so as to increase the thickness of the isodense layers; and collecting the isodense layers of gradient liquid as various fractions, by removing the gradient liquid through the lower port.

4,436,635

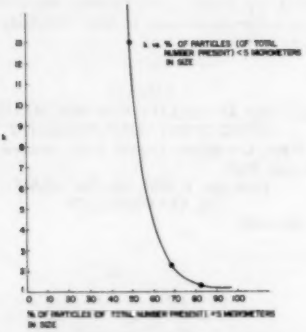
PROCESS FOR FILTRATION OF OIL AND GAS WELL TREATMENT FLUIDS

Howard Abrams, Plainview, and Barrington T. Allen, Bayville, both of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Continuation-in-part of Ser. No. 305,070, Sep. 24, 1981, abandoned. This application Aug. 6, 1982, Ser. No. 405,938

Int. Cl.³ B01D *27/06*

U.S. Cl. 210—806 **20 Claims**



1. A filtering process for obtaining a clear filtrate effluent from a turbid oil or gas well treatment fluid contaminated with up to about 2,000 parts per million of solid particulates comprised of drilling and formation debris having particle sizes in the range of from about 0.1 to about 30 micrometers comprising passing said treatment fluid through a surface filter having an absolute pore rating of about 40 micrometers or less at a flow density of from about 0.05 to about 0.5 gallons per minute per square foot of filter surface such that (1) initially at least a portion of said particulates is collected on the upstream surface of said surface filter and begins forming a filter cake with enhanced capability for removing particulates smaller than the absolute pore rating of said surface filter and (2) thereafter said treatment fluid is filtered through a filter composite of (i) said surface filter and (ii) said filter cake, whereby a clear filtrate effluent substantially free of solid particulates having particle sizes in the range of from about 0.1 to about 30 micrometers or higher is obtained and the useful life of said surface filter is extended.

4,436,636

INVERT EMULSION WELL SERVICING FLUIDS

William M. Carnicom, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Dec. 21, 1981, Ser. No. 332,652

Int. Cl.³ C09K *7/06*

U.S. Cl. 252—8.5 P **4 Claims**

1. An invert emulsion well servicing fluid consisting essentially of:

a liquid hydrocarbon oleaginous phase, an aqueous phase, the volume ratio of said oleaginous phase to said aqueous phase being from about 99/1 to about 1/1, an invert emulsifying agent, from about 1 to about 20 ppb of said fluid of a finely divided, solid, particulate, linear, high density polyethylene having an average particle diameter of from about 15 to about 40 microns, said particles being generally spherically shaped, said polyethylene having a density of at least about 0.94 g/cc, and from about 0.5 to about 4 ppb of said fluid of an organophilic clay.

4,436,637

FABRIC SOFTENING HEAVY DUTY LIQUID DETERGENT CONTAINING A MIXTURE OF WATER INSOLUBLE SOAP AND CLAY

Pallassana N. Ramachandran, Robbinsville, and Kenneth S. Peterson, Keasbey, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 13, 1982, Ser. No. 449,271

Int. Cl.³ C11D *3/12*; D06M *13/24*

U.S. Cl. 252—8.7 **8 Claims**

1. A fabric softening heavy duty liquid detergent which comprises 5 to 20% of synthetic organic detergent selected from the group consisting of anionic, nonionic and amphoteric detergents, and mixtures thereof, 5 to 35% of builder salt, and mixtures thereof, 8 to 20% of a swelling bentonite, 0.5 to 10% of water insoluble metal soap, and 40 to 70% of water.

4,436,638

ADDITIVE COMPOSITION FOR RELEASE OF STUCK DRILL PIPE

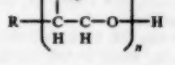
Thad O. Walker, Humble, and Patricia C. Matthews, Houston, both of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 254,424, Apr. 15, 1981. This application Jul. 29, 1981, Ser. No. 288,110

Int. Cl.³ E21B *23/00*

U.S. Cl. 252—8.55 R **8 Claims**

1. An improved method of releasing a stuck drill string in the borehole of an underground formation during drilling operations employing a drilling fluid which comprises contacting said stuck drill string with an additive composition effective to reduce the annular pressure exerted by the drilling fluid against the stuck drill string and to release said stuck drill string, said additive composition being comprised of from 5 to 18 weight percent of a propoxylated C_{18}–C_{32} alcohols mud dehydrating agent represented by the formula:



wherein R represents from 18 to 32 carbon alkoxy groups and n is an integer of from 18 to 35; 8 to 20 weight percent of an oil-soluble C_8–C_{22} fatty acid ester of a polyol or polyol anhydride emulsifier-wetting agent; and, a liquid hydrocarbon dilu-

ent, said weight percent being based on the total weight of said composition.

4,436,639

AMMONIUM SALTS OF POLYMALEIC ACIDS AND USE AS CORROSION INHIBITORS IN WATER-IN-OIL EMULSIONS

Knut Oppenlaender, Ludwigshafen; Karl Stork, Lampertheim, and Klaus Barthold, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 10, 1982, Ser. No. 376,284

Claims priority, application Fed. Rep. of Germany, May 15, 1981, 3119376

Int. Cl.³ C09K *7/02*; C23F *11/14*

U.S. Cl. 252—8.55 E **5 Claims**

1. A polymaleic acid salt obtained by reacting a polymaleic acid having a molecular weight of 200 to 1500 with an amine having the formula

in which R^1 and R^2 are the same or different and are H or C_9–C_{20} alkyl or C_9–C_{20} alkenyl radical and R^3 is a C_9–C_{20} alkyl or C_9–C_{20} alkenyl radical.

4. A water-in-oil emulsion containing from 100 ppm to 10,000 ppm of a salt of claim 1.

4,436,640

GLYCOLATE DITHIOPHOSPHORIC ACIDS, METAL SALTS THEREOF AND OIL COMPOSITIONS CONTAINING THE SALTS

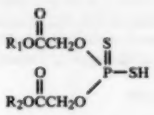
Elaine S. Yamaguchi, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 27, 1982, Ser. No. 382,459

Int. Cl.³ C10M *1/48*

U.S. Cl. 252—32.7 E **10 Claims**

1. A compound of the formula:



wherein R_1 and R_2 are the same or different alkyl groups containing 1 to 12 carbon atoms or an alkali or alkaline earth metal or transition metal salt thereof.

4,436,641

REFRIGERATION LIQUID WITH BLUE LEAK INDICATOR AND PROCESS OF USING SAME

Dale E. Stelz, Goddard, Kans.; Frank I. Carroll, Durham, and Wilson M. Whaley, Cary, both of N.C., assignors to Racon Incorporated, Wichita, Kans.

Continuation-in-part of Ser. No. 265,697, May 21, 1981, Pat. No. 4,369,120. This application Nov. 29, 1982, Ser. No. 444,884

Int. Cl.³ C09K *5/04*

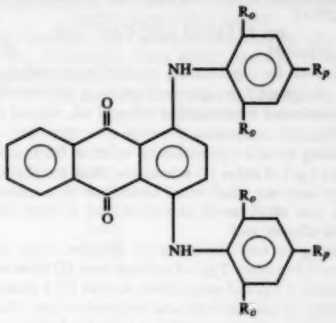
U.S. Cl. 252—68 **9 Claims**

7. A blue, leak-indicating refrigeration liquid which comprises

(a) at least one oil-soluble halocarbon selected from the group consisting of octafluoropropane, octafluorocyclobutane, chloroheptafluorocyclobutane and haloalkanes containing from one to two carbon atoms, from one to six fluorine atoms and from zero to three halogen atoms selected from the group consisting of chlorine and bromine and boiling at a temperature below about 30° C. at atmospheric pressure,

(b) a refrigeration oil composed essentially of a refined mineral oil having a pour point of between about 0° and −50° C., and

(c) a blue anthraquinone dye corresponding to the formula



wherein each R_p is methyl, one R_o of each anilino group is ethyl, and the other R_o of each anilino group is either methyl or ethyl, and wherein the proportion of halocarbon to refrigeration oil is between about 10:1 and about 4:6 and wherein the concentration of dye in the liquid is between about 0.01 and 0.5%.

4,436,642

NONIONIC SURFACTANTS FOR AUTOMATIC DISHWASHER DETERGENTS

Robert J. Scott, New City, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 17, 1982, Ser. No. 349,597

Int. Cl.³ C11D *1/70, 3/075, 3/395*

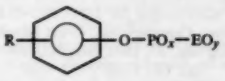
U.S. Cl. 252—95 **4 Claims**

1. An automatic dishwasher detergent comprising:

(a) from about 10 weight percent to about 90 weight percent of a detergency builder;

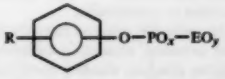
(b) from about 0.5 weight percent to about 10 weight percent of an active chlorine containing compound; and

(c) from about 1 weight percent to about 15 weight percent of a nonionic surfactant of the formula



wherein R is a nonyl group, x is 12 and y is 4.

4. A method of washing dishes comprising contacting dishes in an automatic dishwasher with a detergent comprising a nonionic surfactant of the formula:



wherein R is a nonyl group; PO is an oxypropylene group; x is 12; EO is an oxyethylene group; and y is 4, said detergent containing an active chlorine-containing compound and exhibiting low-foaming, superior wetting and scouring, and chlorine compatibility.

4,436,643

REGENERATION OF AQUEOUS DEGREASING AND CLEANING SOLUTIONS

Helga Bürger, Erkrath, and Christian Rossmann, Langenfeld, both of Fed. Rep. of Germany, assignors to Henkel KGaA, Duesseldorf, Fed. Rep. of Germany

Filed Apr. 23, 1982, Ser. No. 371,288

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1981, 3137341

Int. Cl.³ C11D *3/08*; C23G *1/36*

U.S. Cl. 252—135 11 Claims

1. A process for regenerating an alkaline or neutral silicate-free and phosphate-free aqueous degreasing and cleaning solution contaminated by emulsified mineral oil, natural oil, or a mixture thereof, comprising the steps of

(a) adding to said contaminated solution from about 1 to about 5 g/l of either (1) at least one alkali metal phosphate, (2) at least one alkali metal silicate, or (3) a mixture of at least one alkali metal phosphate and at least one alkali metal silicate, and

(b) adding to said contaminated solution either (1) from about 0.3 to about 2 g/l of calcium ions, (2) from about 0.2 to about 1.2 g/l of magnesium ions, or (3) a quantity of a mixture of calcium ions and magnesium ions chemically equivalent to from about 0.3 to about 2 g/l of calcium ions.

4,436,644

ADJUNCTS FOR USE IN THE MANUFACTURE OF DETERGENT POWDERS

Richard S. Johnson, and John K. Potter, both of Wirral, England, assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 200,791, Oct. 27, 1980, Pat. No. 4,328,114. This application Jan. 11, 1982, Ser. No. 338,703

Claims priority, application United Kingdom, Oct. 31, 1979, 7937630

The portion of the term of this patent subsequent to May 4, 1999, has been disclaimed.

Int. Cl.³ C11D *11/00*

U.S. Cl. 252—174.13 10 Claims

1. An adjunct for the use in the manufacture of a detergent powder comprising a liquid nonionic surfactant absorbed on granulated, substantially fully hydrated sodium tripolyphosphate or sodium dihydrogen orthophosphate wherein the amount of nonionic surfactant absorbed on the sodium tripolyphosphate or sodium dihydrogen orthophosphate is at least 0.85 cc/g.

4,436,645

FLUORIDE CONTAINING COMPOSITIONS FOR REMOVAL OF POLLUTANTS FROM WASTE WATERS AND METHODS OF UTILIZING SAME

Anthony V. Ceaser, Cemetary Rd., Great Meadows, N.J. 07838

Filed Sep. 27, 1982, Ser. No. 424,902

Int. Cl.³ C02F *1/52, 1/62*

U.S. Cl. 252—179 10 Claims

1. A composition adapted to the removal of heavy metal, water soluble, water immiscible and water immiscible organic pollutants from waste waters comprising

(a) ion exchange absorbent gels, consisting of at least one member selected from the group consisting of calcined clays, amorphous silicas, aluminas, natural and artificial zeolites, perlites or vermiculite,

(b) cementitious materials selected from the group consisting of Portland cements, aluminous cements, puzzalan cements, gypsum plasters, alkaline earth metal oxides and alkaline earth metals hydrated oxides,

(c) water soluble fluoride containing salts, and

(d) alkali metal ortho phosphates, provided that where no alkali metal ortho phosphate is present an additional component is selected from group (a) or group (b), further provided that where no alkali metal ortho phosphate or group (a) components are present, three components are selected from group (b).

4,436,646

GREEN-EMITTING PHOSPHOR FOR CATHODE-RAY TUBE

Takeshi Takahara, Yokosuka; Takeo Sato; Takeo Itou, both of Fukaya, and Masaaki Tamatani, Fujisawa, all of Japan, assignors to Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 22, 1982, Ser. No. 421,269

Claims priority, application Japan, Oct. 6, 1981, 56-158218

Int. Cl.³ C09K *11/463*

U.S. Cl. 252—301.4 S 1 Claim

1. A green-emitting phosphor for a cathode-ray tube, consisting of calcium sulfide activated by cerium and lithium, the cerium concentration being within the range of 0.06 to 0.5 mol % and the lithium concentration being in the range 0.05 to 0.4 mol % said phosphor exhibiting a higher luminous efficiency than calcium sulfide phosphor activated by cerium and sodium when excited at a current density of 4 $\mu A/cm^2$.

4,436,647

SELF-EMULSIFIABLE ANTIFOAMS

Ewald Pirson, Burghausen; Jakob Schmidlkofer, Mehring-Öd, and Ernst Innertsberger, Burghhausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 114,874, Jan. 24, 1980, abandoned. This application Apr. 21, 1982, Ser. No. 370,445

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1979, 2903423

Int. Cl.³ B01D *17/00*

U.S. Cl. 252—358 3 Claims

1. A self-emulsifiable antifoam composition which is essentially anhydrous consisting essentially of an organopolysiloxane in which at least 80 mole percent of the siloxane units are dihydrocarbon siloxane units, a filler in an amount of from about 0.1 to about 30 percent by weight based on the weight of the organopolysiloxane, a water-soluble cellulose derivative in an amount of from about 2 to 30 percent by weight based on the weight of the composition and from about 5 to about 25 percent by weight based on the weight of the composition of at least one compound of the general formula

$$RCOO(CH_2)_2SO_3M,$$

where R is an aliphatic hydrocarbon radical having at least 7 carbon atoms, in which at least 10 percent of the number of R radicals must have at least 11 carbon atoms, and M is selected from the group consisting of an ammonium group and an alkali metal ion.

4,436,648

ELECTRICALLY CONDUCTING THERMOPLASTIC MATERIAL, ITS MANUFACTURE, AND RESULTING ARTICLE

Sarwan K. Khanna, Carmel, and Satya P. Khanna, Indianapolis, both of Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

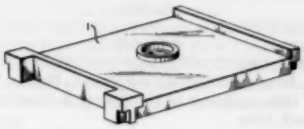
Filed Dec. 22, 1980, Ser. No. 219,260

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—511 5 Claims

1. Electret microphone comprising a molded thermoplastic component of which at least a portion is electrically conducting, the material of said at least a portion consisting essentially of an acrylonitrile butadiene styrene copolymer resin and carbon particles, carbon being contained in said material in a percentage by weight which is here designated as x and which

is in the range of 5–20 weight percent of said material, and said material having electrical sheet resistance which, in the absence of surface metallization, is less than or equal to a value of $60{,}000/x^3$ ohm per square.



4,436,649

GREASE COMPOSITION WITH IMPROVED LOW SHEAR STABILITY

Jeffrey E. Stemke, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 30, 1982, Ser. No. 393,904
Int. Cl.³ C10M 5/20
U.S. Cl. 252—51.5 A **6 Claims**

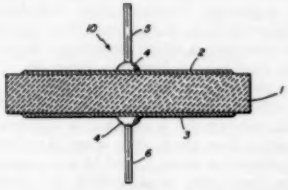
1. A grease composition comprising a major amount of a lubricating oil base vehicle, a polyurea gellant in an amount sufficient to thicken the base vehicle to a grease consistency, and from 0.1 to 20 weight percent of a polyhydroxylated compound.

4,436,650

LOW VOLTAGE CERAMIC VARISTOR

Leslie J. Bowen, Waltham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jul. 14, 1982, Ser. No. 398,038
Int. Cl.³ H01B 1/06
U.S. Cl. 252—518 **6 Claims**



1. A varistor comprising a sintered body of a bulk type, said sintered body consisting

essentially of zinc oxide as a main component of the sintered body, said zinc oxide having an average grain size greater than about 50 microns;

an additive for imparting to the sintered body a voltage-dependent property, said additive comprising the oxide of elements selected from the group consisting of Bi, Co, Mn, Sb, Cr, Ti, Pb, Ba, Ni, Sn, and combinations thereof, and being approximately 3 mole percent of the sintered body composition;

a zinc oxide grain growth promoting agent, said agent having a cation having an ionic radius less than the ionic radius of Zn^{+2} and the cation of said agent having an ionic valence of three, said cation of said zinc oxide grain growth promoting agent being aluminum, said zinc oxide grain growth promoting agent being from about 0.001 to about 1.0 mole percent of said sintered body;

and

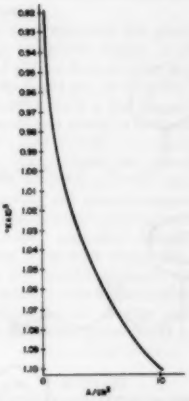
a grain boundary barrier layer stabilizer for imparting to the sintered body a stable grain boundary barrier layer, said stabilizer having a cation having an ionic radius greater than the ionic radius of Zn^{+2} and the cation of said stabilizer having an ionic valence of one, said cation of said stabilizer being selected from the group consisting of sodium, potassium, rubidium, cesium, and combinations thereof, said stabilizer being from about 0.001 to about 10 mole percent of said sintered body.

4,436,651

THERMIONIC CATHODE AND PROCESS FOR PREPARING THE SAME

David M. Corneille, c/o Cathodyne Corporation, 490 Windsor Park Dr., Centerville, Ohio 45459, assignor to David M. Corneille, Springboro, Ohio

Filed Apr. 20, 1981, Ser. No. 255,588
Int. Cl.³ H01B 1/06
U.S. Cl. 252—521 **16 Claims**



1. A thermionic cathode employing, in a matrix metal, an alkaline earth metal hydroxy oxy carbonate as an emission material, wherein said alkaline earth metal is selected from the group consisting of barium, strontium, calcium and mixtures thereof, said matrix metal is selected from the group consisting of rhenium, nickel, molybdenum, platinum, paladium, ruthenium, iron, tantalum, and alloys thereof, and the weight ratio of said emission material to said matrix metal as in the range of approximately 1/10 to 10/1.

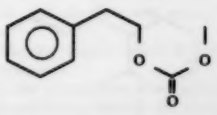
4,436,652

PHENYLETHYLMETHYLCARBONATE MIXTURES CONTAINING SAME AND ORGANOLEPTIC USES THEREOF

Richard M. Boden, Monmouth Beach; Theodore J. Tyszkiewicz, Sayreville, and Hugh Watkins, Lincroft, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

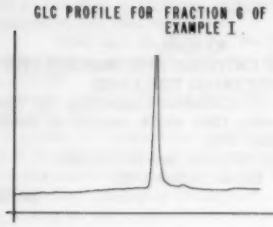
Division of Ser. No. 329,221, Dec. 10, 1981. This application Sep. 23, 1982, Ser. No. 422,489
Int. Cl.³ A61K 7/46; C11B 9/00
U.S. Cl. 252—522 R **3 Claims**

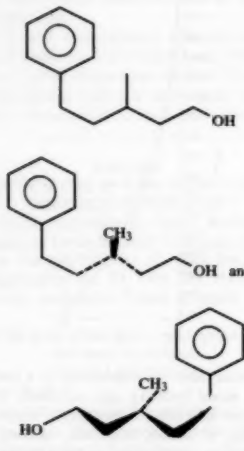
1. A mixture consisting essentially of phenylethyl methylcarbonate having the structure:



and at least one substance selected from the group consisting of:

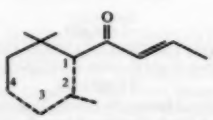
(i) 3-Methyl-1-phenyl-pentanol-5 or stereoisomers thereof having a structure selected from the group consisting of:



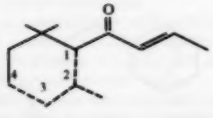


the weight ratio of phenylethyl methylcarbonate:3-methyl-1-phenyl-pentanol-5 being from about 0.1:1 up to about 1:0.1; and

(ii) at least one cyclohexyl butenone derivative defined according to the structure:



wherein one or two of the dashed lines is a carbon-carbon double bond and the other of the dashed lines is a carbon-carbon single bond with the proviso that when two of the dashed lines are carbon-carbon double bonds, said carbon-carbon double bonds are conjugated, the weight ratio of phenylethyl methylcarbonate:cyclohexyl butenone derivative having the generic structure:



being from about $1:1\times10^{-7}$ up to about 1:1.

2. A process for augmenting or enhancing the aroma of consumable materials selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of adding to a perfume composition or cologne an aroma augmenting or enhancing quantity of the composition of matter of claim 1.

4,436,653

STABLE LIQUID DETERGENT COMPOSITIONS

Ronald L. Jacobson, Wyoming, and Dean C. Hanley, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 251,650, Apr. 6, 1981, abandoned. This application Mar. 18, 1982, Ser. No. 359,557

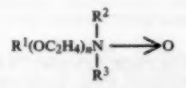
Int. Cl.³ C11D 1/44

U.S. Cl. 252—547 **15 Claims**

1. A stable liquid detergent composition comprising:

(a) from about 3% to about 20% of an ethoxylated alcohol or ethoxylated alkyl phenol nonionic surfactant of the formula $R(OC_2H_4)_nOH$, wherein R is selected from the group consisting of aliphatic hydrocarbon radicals containing from about 8 to about 15 carbon atoms and alkyl phenyl radicals in which the alkyl group contains from about 8 to about 12 carbon atoms, n is from about 3 to about 9, and said nonionic surfactant has an HLB value of from about 10 to about 13;

(b) from about 2% to about 15% of an amine oxide surfactant having the formula



wherein R^1 is an alkyl, hydroxyalkyl, alkoxyhydroxypropyl, alkoxyhydroxyethyl, alkyl amido or alkyl carboxylate radical in which the alkyl and alkoxy portions contain from about 8 to about 18 carbon atoms, R^2 and R^3 are selected from the group consisting of methyl, ethyl, propyl, isopropyl, 2-hydroxyethyl, 2-hydroxypropyl, 3-hydroxypropyl, or said groups joined together to form a cyclic structure in which the nitrogen is part of a heterocyclic ring, and n is from 0 to about 10;

(c) from about 1% to about 10% of an alcohol polyethoxylate sulfate surfactant having the formula $R^4O(C_2H_4O)_mSO_3M$, wherein R^4 is an alkyl or hydroxyalkyl radical containing from about 10 to about 18 carbon atoms, m is from about 2 to about 10 and M is a compatible cation;

(d) from about 10% to about 20% of a water-soluble nitrilotriacelate or citrate detergency builder capable of sequestering calcium and magnesium ions in water solution; provided that components (a), (b), (c) and (d) together represent less than about 40% by weight of the composition;

(e) from 0% to about 25% of a hydrotrope;

(f) up to about 89% water; said liquid detergent composition being in isotropic form and having a pH of from about 8 to about 13 in a 0.2% water solution at 20° C.

4,436,654

FIRE-RETARDANT INSULATING OILS

Etsuo Ohe; Katsuo Sugawara, both of Hitachi; Ititaro Tani, Kitaibaraki, and Hideo Tsukioka, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 7, 1982, Ser. No. 376,125

Claims priority, application Japan, May 8, 1981, 56-68168

Int. Cl.³ H01B 3/24

U.S. Cl. 252—574 **14 Claims**

1. An insulating oil characterized in that a phosphoric triester containing at least one aromatic ring is mixed with a benzenetricarboxylic acid trialkyl ester or with a polyol ester obtained from trimethylolpropane and a saturated fatty acid, said triester being mixed in an amount of 30 to 80% by weight

based on the total weight of said triester and either said benzenetricarboxylic acid trialkyl ester or said polyol ester.

4,436,655

PROCESS FOR THE CONTINUOUS PURIFICATION OF CONTAMINATED FLUIDS AND FOR CONDITIONING THE RESULTING CONCENTRATES

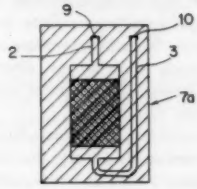
Ermanno Masotto, and Sergio Gagliardi, both of Rome, Italy, assignors to Comitatonazionale Per Lienergia Nucleare, Rome, Italy

Continuation of Ser. No. 86,669, Oct. 19, 1979, abandoned. This application Jun. 29, 1981, Ser. No. 278,419

Claims priority, application Italy, Oct. 27, 1978, 51669 A/78

Int. Cl.³ G21F 9/12

U.S. Cl. 252—628 **8 Claims**



1. In a process for continuously treating contaminants contained in a fluid, for the purpose of their final disposal, comprising providing at least one expendable collecting receptacle which has an inlet port and an outlet port and which is totally encapsulated with a solid inert mass except for the ports, purifying the fluid by at least one operation which includes treating the fluid to remove contaminants therefrom and retaining the contaminants in said collecting receptacle, the fluid having been passed into said collecting receptacle through said ports, and subsequently encapsulating the ports in a solid inert mass, the improvement of (a) placing the collecting receptacle in an open top container of substantially greater size than the collecting receptacle, and totally encapsulating the collecting receptacle except for the ports with said solid inert mass which is added to the container before purifying the fluid, so as to completely surround the collecting receptacle up to a level above the top of the collecting receptacle and below the ports and the top of the container, said mass functioning as a biological shield, or as a coating resistant to chemical attack and mechanical stress, or as a biological shield and as a coating resistant to chemical attack and mechanical stress, and (b) rendering insoluble the contaminants within said collecting receptacle by passing into said receptacle in a continuous way through said inlet port with excess passing out through said outlet port, after purifying the fluid and before encapsulating the ports, at least one substance which solidifies to a solid matrix therefore rendering the contaminants insoluble within said collecting receptacle.

4,436,656

NOVEL ANTITUMOR GLYCOPROTEIN SUBSTANCE AND ITS PREPARATION

Takuma Sasaki, Tokyo; Kazuya Nakamichi; Yakudo Tachibana, both of Sohka, and Kiyoshi Minami, Koshigaya, all of Japan, assignors to Maruzen Oil Co., Ltd., Osaka, Japan

Filed Aug. 2, 1983, Ser. No. 519,724

Claims priority, application Japan, Aug. 9, 1982, 57-137209

Int. Cl.³ A23J 1/04; C07G 7/00

U.S. Cl. 260—112 R **4 Claims**

1. A glycoprotein substance possessing an antitumor activity which is recovered from the liquid portion coming from cooking of raw scallop shellfish with a hot aqueous solvent or with the vapor of such solvent and which has the following characteristics:

(1) Appearance: White, powdery solid;

(2) Solubility: Soluble in water, but insoluble in organic solvents such as methanol, ethanol and acetone;

(3) Acidic or basic nature: Amphoteric electrolyte having an isoelectric point of pH 5.2;

(4) Infrared absorption spectrum (pelleted in KBr): With characteristic absorption peaks at 3500~3300, 1660 and 1550 cm^{-1};

(5) Ultraviolet absorption spectrum in an aqueous solution: With a characteristic absorption peak $\lambda_{max}^{H_2O}$ at 279 nm;

(6) Color reactions: Positive in biuret reaction, xanthoproteic reaction, phenolic reagent reaction according to Lowry-Folin method, anthrone-sulfuric acid reaction and phenol-sulfuric acid reaction, but negative in cysteine-sulfuric acid reaction;

(7) Average molecular weight: About 5000 as measured by gel-electrophoresis.

3. A process for the preparation of a glycoprotein substance having an average molecular weight of about 5000 and an isoelectric point of pH 5.2 from scallop shellfish which comprises recovering the liquid portion which comes from cooking of raw scallop shellfish with a hot aqueous solvent or with vapor of such solvent and which is to be discarded as waste, concentrating the liquid portion to a smaller volume or to dryness to yield a concentrate or dry powder, dissolving the concentrate or dry powder in water to form an aqueous solution thereof, subjecting the aqueous solution to a series of treatments comprising ion-exchange chromatography with a basic anion exchanger, isoelectric focusing and molecular weight-fractionating treatments comprising gel-filtration and electrophoresis, in any desired sequence, whereby to isolate a glycoprotein substance which is adsorbable on the basic ion exchanger and which has an average molecular weight of about 5000 and an isoelectric point of pH 5.2.

4,436,657

ANTITUMOR GLYCOPROTEIN SUBSTANCE AND PREPARATION THEREOF

Takuma Sasaki, Tokyo; Kazuya Nakamichi; Yakudo Tachibana, both of Sohka, and Kiyoshi Minami, Koshigaya, all of Japan, assignors to Maruzen Oil Co., Ltd., Osaka, Japan

Filed Aug. 2, 1983, Ser. No. 519,725

Claims priority, application Japan, Aug. 9, 1982, 57-137210

Int. Cl.³ A23J 1/04; C07G 7/00

U.S. Cl. 260—112 R **6 Claims**

1. A glycoprotein substance possessing an antitumor activity which is recovered from the liquid portion which comes from cooking of raw scallop with a hot aqueous solvent or with the vapor of such solvent and which has the following characteristics:-

(1) Appearance: White, powdery solid.

(2) Solubility: Soluble easily in water, but insoluble in organic solvents such as methanol, ethanol and acetone.

(3) Acidic or basic nature: Amphoteric electrolyte having an isoelectric point of pH 5.5.

(4) Infrared absorption spectrum (pelleted in KBr): With characteristic absorption peaks at 3500~3300, 1660 and 1550 cm^{-1}.

(5) Ultraviolet absorption spectrum in an aqueous solution: With a characteristic absorption peak λ_{max} H_2O at 255 nm.

(6) Color reactions: Positive in biuret reaction, xanthoproteic reaction, phenolic reagent reaction according to Lowry-Folin method, anthrone-sulfuric acid reaction, phenol-sulfuric acid reaction and cysteine-sulfuric acid reaction.

(7) Average molecular weight: About 470,000 as measured by gel-electrophoresis.

4. A process for the preparation of a water-soluble, antitumor glycoprotein substance having an average molecular weight of about 470,000 and an isoelectric point of pH 5.5 from scallop which comprises recovering the liquid portion which comes from cooking of raw scallop with a hot aqueous solvent

or with vapor of such solvent and which is to be discarded as waste, concentrating the liquid portion thus recovered to a smaller volume or to dryness to yield a concentrate or dry powder, dissolving the concentrate or dry powder in water or an aqueous solvent to form an aqueous solution thereof and subjecting the aqueous solution to a series of treatments comprising ion exchange chromatography with a basic anion exchanger and molecular weight-fractionating treatments comprising gel-filtration and electrophoresis, in any desired sequence, whereby isolating a fraction consisting essentially of a glycoprotein substance which is adsorbable on a basic anion exchanger and which has an average molecular weight of about 470,000 and an isoelectric point of pH 5.5.

4,436,658

PROCESS OF EXTRACTION OF LACTOFERRINE AND IMMUNOGLOBULINS OF MILK

Andre Peyrouset, Ger, and Francois Spring, Pau, both of France, assignors to Societe Nationale Elf Aquitaine, France

Filed May 12, 1982, Ser. No. 377,316

Claims priority, application France, May 15, 1981, 81 09740

Int. Cl.³ A23J *1/20*

U.S. Cl. 260—122 **7 Claims**

1. In a process of extraction of iron-fixing milk proteins, from an aqueous medium substantially free from caseins by adsorption on a solid support followed by elution of the adsorbed proteins by means of an acid solution, the improvement which comprises effecting the adsorption in a weakly basic medium at a pH of 7.7 to 8.8 on pulverulent silica having a particle size from 5 um to 5 mm, a specific surface of about 5 to 150 m^2/g and a pore diameter of from 25 to 250 nm.

4,436,659

METALIZED DYES, THEIR MANUFACTURE AND USE

Arthur Bühler, Rheinfelden, and Hans U. Schütz, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 146,973, May 5, 1980, Pat. No. 4,318,849, which is a division of Ser. No. 904,358, May 9, 1978, Pat. No. 4,215,042, which is a continuation of Ser. No. 589,963, Jun. 24, 1975, abandoned. This application Nov. 9, 1981, Ser. No. 319,533

Claims priority, application Switzerland, Jul. 16, 1974, 9764/74; May 27, 1975, 6750/75

Int. Cl.³ B66C *23/60*

U.S. Cl. 260—146 R **6 Claims**

1. A copper, nickel, chromium or cobalt complex of an azo dye of the formula

$$U—R_2—Z(Ar—N=N—)_mD(Y)—N=N—E—Y'$$

wherein

D is benzene or naphthalene,

Y is hydroxy, methoxy or carboxy,

Y' is hydroxy or amino,

E is 6-hydroxypyridone or 6-(amino, alkoxy, aryloxy, alkylmercapto or arylmercapto)-2,4-diamino-5-(cyano or carbamido)pyridine

Z is $—SO_2—$, $—SO_2N(R_1)—$ or $—CON(R_1)—$ wherein R_1 is hydrogen or C_1-C_6-alkyl,

R_2 is C_1-C_4-alkylene or arylene,

Ar is arylene,

m is 0 or 1 and

U is a sulfonic acid group or a carboxy group, and wherein D and E contain no ionogenic substituents in addition to U except that together D and E may further contain one sulfo group.

4,436,660

PROCESS FOR THE PRODUCTION OF 5-CYANO-AND 5-CARBOXAMIDO-5H-DIBENZ[B,F]AZEPINES

Ernst Aufderhaar, Kaiseraugst; Klemenz Sprecher, Basel, and Janos Zergenyi, Seltisberg, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 198,887, Oct. 20, 1980, abandoned. This application May 14, 1982, Ser. No. 378,464

Claims priority, application Switzerland, Oct. 30, 1979, 9705/79

Int. Cl.³ C07D *223/26*

U.S. Cl. 260—239 D **4 Claims**

1. A process for producing 5-cyano-5H-dibenz[b,f]azepine comprising reacting 5H-dibenz[b,f]azepine with cyanogen chloride or cyanogen bromide in the presence of at least catalytically effective amounts of N,N-dimethylacetamide, N,N-diethylacetamide, N,N-di-npropylacetamide, N,N-dimethylpropionamide or N,N-diethylpropionamide, hexamethylphosphoric acid triamide, N-methyl-pyrrolidone-(2), sulfolane, benzyltriethylammonium chloride or dibenzyl-diethylammonium chloride as strong polar substances within the temperature range of 20°–100° C.

2. A process for producing 5H-dibenz[b,f]azepine-5-carboxamide comprising reacting 5H-dibenz[b,f]azepine with cyanogen chloride or cyanogen bromide in the presence of at least catalytically effective amount of N,N-dimethylacetamide, N,N-diethylacetamide, N,N-di-n-propylacetamide, N,N-dimethylpropionamide or N,N-diethylpropionamide, hexamethylphosphoric acid triamide, N-methyl-pyrrolidone-(2), sulfolane benzyltriethylammonium chloride or dibenzyl-diethylammoniumchloride as strong polar substances within the temperature range of 20°–100° C., hydrolysing the 5-cyano-5H-dibenz[b,f]azepine obtained by treating with formic or acetic acid or trichloro- or trifluoroacetic acid in admixture with sulfuric acid and finally treating the mixture with water at a temperature range of −5° to +80° C.

3. A process for producing 5H-dibenz[b,f]azepine-5-carboxamide comprising reacting 5H-dibenz[b,f]azepine with cyanogen chloride or cyanogen bromide in the presence of at least catalytically effective amounts of N,N-dimethylacetamide, N,N-diethylacetamide, N,N-di-n-propylacetamide, N,N-dimethylpropionamide or N,N-diethylpropionamide, hexamethylphosphonic acid triamide, N-methyl-pyrrolidone-(2), sulfolane, benzyltriethylammonium chloride or di-benzyl-diethylammonium chloride as strong polar substances within the temperature range of 20°–100° C., hydrolysing the 5-cyano-5H-dibenz[b,f]azepine obtained by reacting with 30% H_2O_2 and sodium hydrogen carbonate and finally treating the mixture with water at a temperature range of −5° to +80° C.

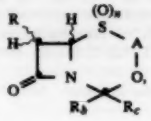
4. A process for producing 5H-dibenz[b,f]azepine-5-carboxamide comprising reacting 5H-dibenz[b,f]azepine with cyanogen chloride or cyanogen bromide in the presence of at least catalytically effective amounts of N,N-dimethylacetamide, N,N-diethylacetamide, N,N-di-n-propylacetamide, N,N-dimethylpropionamide or N,N-diethylpropionamide, hexamethylphosphoric acid triamide, N-methyl-pyrrolidone-(2), sulfolane, benzyltriethylammonium chloride or dibenzyl-diethylammonium chloride as strong polar substances within the temperature range of 20°–100° C., hydrolyzing the 5-cyano-5H-dibenz[b,f]azepine obtained by reacting with the complex $BF_3.2CH_3COOH$ in acetic acid and chlorobenzene and then decomposing the crystalline addition compound of 5H-dibenz[b,f]azepine 5-carboxamide with BF_3 obtained by treatment with water in a temperature range of −5° to +80° C.

4,436,661
3-SUBSTITUTED BICYCLIC AZETIDINONE DERIVATIVES

Hans R. Pfaendler, Liestal, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 171,521, Jul. 23, 1980, abandoned. This application Dec. 4, 1981, Ser. No. 327,380
Claims priority, application Switzerland, Aug. 1, 1979, 7077/79; Jul. 1, 1980, 5083/80
Int. Cl.³ C07D *515/04, 205/08, 513/04, 401/04*
U.S. Cl. 260—245.3 **20 Claims**

1. Compounds of the formula



(I)

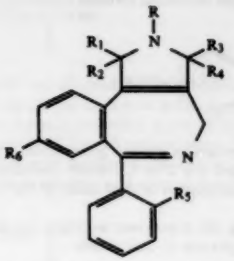
wherein R denotes hydrogen or R_a which denotes lower alkyl, hydroxy-lower alkyl, hydroxy-lower alkyl protected against oxidation by a conventional hydroxy protecting group, lower alkoxy-lower alkyl, lower alkanoyloxy-lower alkyl, hydroxysulfonyloxy-lower alkyl wherein hydroxysulfonyl is present in the form of an alkali metal salt or an ammonium salt, halo-lower alkyl, lower alkylthio-lower alkyl, lower alkoxycarbonyl-lower alkyl, cyano-lower alkyl, sulfo-lower alkyl wherein sulfo is present in the form of an alkali metal salt or an ammonium salt, amino-lower alkyl, lower alkenyl, lower alkoxycarbonyl, benzyloxycarbonyl, p-nitrobenzyloxycarbonyl, diphenylmethoxycarbonyl, phenoxycarbonyl, phenoxycarbonyl substituted by halogen, lower alkoxy or by nitro, aminocarbonyl, lower alkylaminocarbonyl, di-lower alkylaminocarbonyl, cycloalkyl having 3 to 7 carbon atoms, cycloalkyl-lower alkyl having 4 to 7 carbon atoms, cycloalkenyl having 3 to 7 carbon atoms and one or two carbon-carbon double bonds, cyclohexylvinyl, cyclohexylallyl, cyclohexenylmethyl, 1,4-cyclohexadienylmethyl, phenyl, phenyl-lower alkyl, phenyl or phenyl-lower alkyl wherein phenyl is substituted by lower alkyl, lower alkoxy, halogen, nitro or amino, phenyl-lower alkyl substituted in α-position by hydroxy, hydroxysulfonyloxy, carboxy, sulfo or amino, pyridyl, thienyl, furyl pyridyl-lower alkyl, thienyl-lower alkyl, furyl-lower alkyl, or pyridyl-lower alkyl, thienyl-lower alkyl, or furyl-lower alkyl substituted in α-position by hydroxy, hydroxysulfonyloxy, carboxy, sulfo, or by amino, phenyl-lower alkenyl, or furylallyl, R_b and R_c each denote hydrogen, lower alkyl, phenyl, phenyl-lower alkyl, or, if taken together, lower alkylene, A denotes ethylene, 1,2-propylene, or 1,2-butylene, and n represents zero or two, the sterreoisomers thereof, and mixtures of these stereoisomers.

4,436,662
PYRROLO[3,4-D][2]BENZAZEPINONES

Rodney I. Fryer, North Caldwell; Eugene J. Trybulski, Parsippany, and Armin Walser, West Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 393,142, Jun. 28, 1982, abandoned, which is a continuation-in-part of Ser. No. 379,400, May 18, 1982. This application Mar. 31, 1983, Ser. No. 481,021
Int. Cl.³ C07D *487/02*
U.S. Cl. 260—245.7 **17 Claims**

1. A compound of the formula



wherein R_1 and R_3 are selected from the group consisting of hydrogen, lower alkyl, hydroxy, lower alkoxy or

and R_2 and R_4 are hydrogen or R_1 and R_2 and/or R_3 and R_4 taken together are oxo groups with the proviso that at least one oxo group is present; R is selected from the group consisting of hydrogen, lower alkyl, C_2 to C_7 carboxylic acids and the lower alkyl esters, amides and mono or di lower alkyl amides thereof, hydroxy C_2 to C_7 alkyl and amino C_2 to C_7 alkyl or mono- or di-lower alkyl amino C_2 to C_7 alkyl; R_5 is halogen or hydrogen and R_6 is halogen with the proviso that when R_1 or R_3 is hydroxy, lower alkoxy or

then R is lower alkyl or hydrogen; R_7 is C_1 to C_6 alkyl, phenyl, or hydrogen the N-oxides and the pharmaceutically acceptable salts thereof.

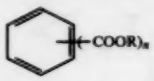
4,436,663
PROCESS FOR SEPARATING PORPHYRINS

Kenji Maruhashi, Yokohama; Ichiro Kojima, Yokosuka; Yutaka Oguchi; Noboru Endoh, both of Tokyo, and Tetsuo Satoh, Yokohama, all of Japan, assignors to Nippon Oil Company, Ltd., Japan

Filed Aug. 2, 1982, Ser. No. 404,054
Claims priority, application Japan, Aug. 4, 1981, 56-121359
Int. Cl.³ C07D *487/22*
U.S. Cl. 260—245.91 **7 Claims**

1. A process for separatig porphyrins, which comprises
(1) adjusting the pH of the liquid phase of a culture broth containing at least two porphyrins to about 2.5 to about 4 and collecting the resulting solid containing the porphyrins,
(2) either (a) preparing an acidic aqueous solution of said solid and adjusting the pH of its liquid phase left after removal of insoluble matter to about 6 to about 8 to form an aqueous solution containing the porphyrins, or (b) preparing an acid-containing lower alcohol solution of said solid, adjusting the pH of its liquid phase left after removal of insoluble matter, adding water in an amount at least twice the amount of the solution to precipitate lower alkyl esters of the porphyrins, collecting the precipitates and dissolving them in an organic solvent to form an organic solvent solution of the porphyrin esters,
(3) contacting the solution obtained in (a) or (b) in step (2) with a copolymer having a surface area of at least about 700 m^2/g and derived from
(i) divinylbenzene,
(ii) styrene or its functional derivative,

(iii) an alkenyl ester of a benzenepolycarboxylic acid represented by the following formula



wherein R represents an alkenyl group having 3 to 10 carbon atoms, and n is 2 or 3, thereby permitting adsorption of the porphyrins or their esters to the copolymer, and

(4) thereafter, eluting the copolymer to obtain fractions of the individual porphyrins or their esters.

4,436,664

NITROGEN-CONTAINING POLYETHER MACROCYCLES WITH A SIDEARM CONTAINING NEUTRAL ELECTRON DONOR GROUPS

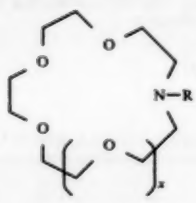
George W. Gokel, Greenbelt, Md., assignor to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 203,165, Nov. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 198,981, Oct. 21, 1980, abandoned. This application Jan. 15, 1982, Ser. No. 339,530

Int. Cl.³ C07D *273/01*

U.S. Cl. 260—330.6 **12 Claims**

1. An ether composition of the formula:



where

x is 0, 1 or 2 and

R is

2-(alkoxy)$_q$alkyl-,
2-alkoxy phenyl-,
2-alkoxy phenylmethyl-,
2-alkoxy phenylethyl-,
amino alkyl-, or
2-amino phenyl-,

wherein q is 1 to 4, the alkoxy and alkyl groups contain 1 to 3 carbon atoms, the said amino is NH_2—, monoalkylamino- or dialkylamino-, wherein the alkyl on the amino contains 1 to 2 carbon atoms and wherein the said 2-alkoxy phenyl rings may optionally be substituted by up to two alkyl and/or alkoxy groups, each of 1 to 3 carbon atoms.

4,436,665

TWO SOLVENT PROCESS FOR PREPARATION OF ESTERS OF 3,5-DIBROMO-4-HYDROXYBENZONITRILE

Richard E. Sheads, Durham, N.C., and David A. Segal, Hatfield, Pa., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 29, 1982, Ser. No. 426,733

Int. Cl.³ C07C *121/75*

U.S. Cl. 260—404 **13 Claims**

1. A method of preparing esters of 3,5-dibromo-4-hydroxybenzonitrile from 4-cyanophenol which comprises:

(a) reacting said 4-cyanophenol with a reactant(s) selected from the group consisting of bromine; bromine and chlorine; and preformed bromine chloride in water or 3% aqueous hydrogen bromide;

(b) azeotropically distilling the resulting solvent medium with an aromatic hydrocarbon; and

(c) reacting the 3,5-dibromo-4-hydroxybenzonitrile intermediate in said aromatic hydrocarbon with an acid halide selected from the group consisting of an aliphatic, cycloaliphatic and aromatic acid halide.

4,436,666

BIOCIDAL ENOL DERIVATIVES OF 2-ARYL-1,3-CYCLOALKANEDIONE COMPOUNDS

Thomas N. Wheeler, Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

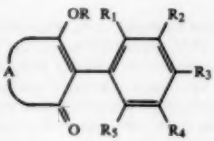
Filed Sep. 22, 1978, Ser. No. 945,005

The portion of the term of this patent subsequent to Jun. 24, 1997, has been disclaimed.

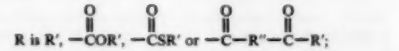
Int. Cl.³ C07C *154/00, 69/96*

U.S. Cl. 260—455 B **21 Claims**

1. A compound of the formula:



wherein: R is



wherein:

R′ may not include more than thirty aliphatic carbons and is selected from: an unsubstituted or substituted alkyl, alkenyl, alkynyl, bicycloalkyl, bicycloalkenyl, cycloalkyl, cycloalkenyl, phenyl, phenylalkyl, naphthyl, or naphthylalkyl group wherein the permissible substituents are one or more alkyl, cyano, nitro, alkoxy, aryloxy, halogen, haloalkyl, alkylthio, arylthio, alkylsulfinyl, arylsulfinyl, alkylsulfonyl, arylsulfonyl alkoxyalkyl, aryloxyalkyl, alkylthioalkyl, arylthioalkyl, arylsulfinylalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, arylsulfonylalkyl, or dialkylamino groups in any combination;

R″ is a divalent moiety which may not include more than thirty aliphatic carbon atoms and is selected from an unsubstituted or substituted alkylene, alkenylene, alkynylene, bicycloalkylene, bicycloalkenylene, cycloalkylene, cycloalkenylene, phenylene, phenylalkylene, naphthylene, or naphthylalkylene group wherein the permissible substituents are one or more alkyl, cyano, nitro, alkoxy, aryloxy, halogen, haloalkyl, alkylthio, arylthio, alkylsulfinyl, arylsulfinyl, alkylsulfonyl, arylsulfonyl alkoxyalkyl, aryloxyalkyl, alkylthioalkyl, arylthioalkyl, alkylsulfinylalkyl, arylsulfinylalkyl, alkylsulfonylalkyl, arylsulfonylalkyl or dialkylamino groups, in any combination;

R_1 may not individually include more than ten aliphatic carbon atoms and is an alkyl, haloalkyl, halogen or polyhaloalkyl group;

R_2, R_3, R_4 and R_5 may not individually include more than ten aliphatic carbon atoms and are individually hydrogen, nitro, polyhaloalkyl, halogen, cyano, alkyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkanoyl amido, amino or haloalkyl groups;

A is an alkylene or alkenylene chain containing two or three carbon atoms which may be substituted by one or more substituents which may be the same or different selected from:

(a) substituents which may not include more than ten aliphatic carbon atoms selected from: an alkyl, alkenyl, cycloalkyl or cycloalkenyl groups, which groups may

be further substituted with one or more cyano, halogen, nitro, alkoxy, aryloxy, alkylthio, arylthio, alkylsulfinyl, arylsulfinyl, alkylsulfonyl, arylsulfonyl, acylamido, or dialkylamino substituents in any combination; and a phenyl group which may be substituted by one or more alkyl, alkenyl, cycloalkyl, cycloalkenyl, cyano, halogen, nitro, alkoxy, aryloxy, alkylthio, arylthio, alkylsulfinyl, arylsulfinyl, alkylsulfonyl, arylsulfonyl, acylamido or dialkylamino substituents in any combination;

(b) a divalent alkylene or alkenylene group having from 2 to 20 carbon atoms completing a 3,4,5,6 or 7 membered carbon ring with the proviso that when A is a hydrocarbon chain containing two carbon atoms, said hydrocarbon chain may not form together with said divalent alkylene group a six membered fused polycyclic ring structure wherein said six membered ring has more than two double bonds.

4,436,667

PROCESS FOR PREPARING CYCLOPROPANE CARBOXYLIC ACID ESTER DERIVATIVES

Michael J. Bull, Kent, England, assignor to Shell Internationale Research Maatschappij B. V., The Hague, Netherlands

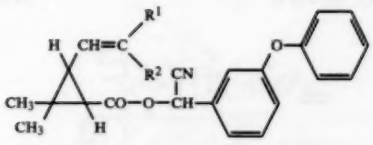
Filed Apr. 10, 1981, Ser. No. 252,892

Claims priority, application United Kingdom, Apr. 23, 1980, 8013309

Int. Cl.³ C07C *121/75*

U.S. Cl. 260—465 D **11 Claims**

1. A process for increasing the IR cis S isomer content in a mixture of cis-isomers of a compound of formula:



wherein R^1 and R^2 are independently chlorine, bromine or methyl, comprising the steps of:

dissolving as a solute a cis-isomer mixture of compound (I) which contains substantial quantities of 1R cis R-isomer and 1S cis S-isomer in an organic amine base having from 5 to 7 carbon atoms selected from a group consisting of secondary amines having two branched alkyl groups and tertiary amines;

evaporating the amine from said solute, whereby during evaporation the dissolved 1R cis R and 1S cis S-isomer content of said solute is progressively epimerized to 1R cis S and 1S cis R-isomers, respectively, which progressively crystallize from said solution as the amine content thereof diminishes by evaporation; and

continuing evaporation until substantially all of said amine is removed from said solute, whereby said solute is recovered as a 1:1 crystalline mixture of 1R cis S and 1S cis R isomers.

4,436,668

PREPARATION OF CARBONATES

Wolfgang Harder, Weinheim; Franz Merger, Frankenthal, and Friedrich Towae, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 28, 1981, Ser. No. 267,763

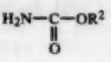
Int. Cl.³ C07C *68/00*

U.S. Cl. 260—463 **12 Claims**

1. In a process for the preparation of a carbonate of the formula

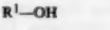
I

where R^1 and R^2 are identical or different and each is an aralkyl group of 7 to 12 carbon atoms, an alkenyl group of 2 to 12 carbon atoms, a cycloalkyl group of 5 to 8 carbon atoms or an alkyl group of 1 to 18 carbon atoms, by reacting a carbamic acid ester with an alcohol, the improvement which comprises: reacting a carbamic acid ester of the formula



II

where R^2 has the above meanings, with an alcohol of the formula



III

where R^1 has the above meanings, at a temperature above 140° C., the ammonia formed being stripped from the reaction mixture during the reaction by passing an inert gas therethrough.

4,436,669

PREPARATION OF AROMATIC/ALIPHATIC NITRILES

Roland Jacques, Ales; Michel Reppelin, Collonges-au-Mont-d'Or, and Laurent Seigneurin, Salindres, all of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed May 14, 1982, Ser. No. 378,191

Claims priority, application France, May 15, 1981, 81 09694

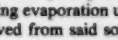
Int. Cl.³ C07C *120/10*

U.S. Cl. 260—465 B **18 Claims**

1. A process for the preparation of an aromatic or aliphatic nitrile having the formula:

(I)

wherein Ar is a benzene radical and A is a direct chemical bond or a hydrocarbon radical having from 1 to 6 carbon atoms, comprising heating to a temperature ranging from about 450° C. to about 550° C. a formamide or formanilide having the formula:



(II)

or an amide having the formula:

(III)

in the presence of a fluorinated siliceous catalyst, said catalyst having been prepared by (i) impregnating a particulate silica containing from about 0.05 to about 2% by weight of fluorine, expressed as F^- bonded to the silica, with a dilute aqueous solution of hydrofluoric acid, said hydrofluoric acid solution having a concentration in HF of less than about 5% by weight, and the ratio by weight of the hydrofluoric acid contained in said aqueous solution thereof to the silica being less than about 5%, followed by (ii) drying the catalyst thus impregnated.

4,436,670

PROCESS FOR PRODUCING HYDROXYBENZONITRILES

Ryuzo Ueno, Nishinomiya; Kazuyuki Sakota, Kobe; Keiji Kawata, Sakai, and Yoshiyuki Naito, Nishinomiya, all of Japan, assignors to Kabushiki Kaisha Veno Seiyaku Oyokenkyuso, Osaka, Japan

Filed Sep. 1, 1982, Ser. No. 413,796

Claims priority, application Japan, Sep. 7, 1981, 56-139831

Int. Cl.³ C07C *120/00, 121/75*

U.S. Cl. 260—465 B **9 Claims**

1. A process for producing a hydroxybenzonitrile, which comprises reacting a hydroxybenzoic acid ester with ammonia in the vapor phase in the presence of a boron phosphate supported catalyst.

4,436,671

PROCESS FOR PRODUCING UNSATURATED ALIPHATIC DINITRILES

Itsuo Furuoya, Suita, and Yuzuru Kitazawa, Hirakata, both of Japan, assignors to Takeda Chemical Industries, Limited, Osaka, Japan

Filed Feb. 2, 1982, Ser. No. 344,936

Claims priority, application Japan, Feb. 12, 1981, 56-19941

Int. Cl.³ C07C *120/14*

U.S. Cl. 260—465.3 **7 Claims**

1. In a process for producing fumaronitrile and maleonitrile which comprises reacting at least one straight chain hydrocarbon having 4 carbon atoms with ammonia and oxygen in the presence of an ammoxidation catalyst composition, the improvement wherein the ammoxidation catalyst consists essentially of the following active components:

(A) at least one oxide of vanadium and tungsten, and

(B)

(1) at least one oxide of antimony, phosphorus and boron, and/or

(2) at least one oxide of chromium, nickel, aluminum and silicon.

4,436,672

OIL RECOVERY METHOD UTILIZING GLYCERYL ETHER SULFONATES

Carter G. Naylor, Austin, Tex., assignor to Texaco, Inc., White Plains, N.Y.

Filed Aug. 16, 1982, Ser. No. 408,364

Int. Cl.³ C07C *143/42, 143/11*

U.S. Cl. 260—512 R **7 Claims**

1. A composition of matter of the formula:

$$RO(AO)_n(CH_2CHO)_mH$$
$$\quad\quad\quad

a bubbler container for holding a quantity of high purity liquid to be vaporized and applied to a using system;

means for transporting a carrier gas through said liquid to transport the vaporized material to the using system;

means for sensing the carrier gas flow rate;

valve means for controlling the flow of said carrier gas;

means for sensing and controlling the temperature of said liquid;

means for sensing the total gaseous pressure in said container; and

controller means connected to receive the sensed carrier gas flow rate, the sensed temperature and the sensed pressure and to compare the sensed pressure (P) with a reference pressure (P_o) to provide a pressure differential ($\Delta P = P - P_o$), said controller generating a signal in a computation wherein, as the differential (ΔP) becomes more positive, said computation demands an increase in carrier gas flow rate, said signal for controlling said carrier gas flow control valve means in a manner to produce a continuous, uniform mass flow of said vaporized liquid to said using system.

4,436,675

MULTISTAGE WATER PURIFICATION APPARATUS

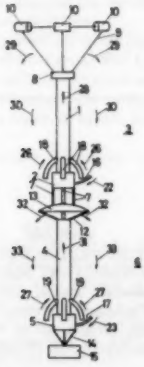
Makino Hisao, Chiba, and Kozima Sadao, Tokyo, both of Japan, assignors to Kaiyo Kogyo Co., Ltd., Tokyo, Japan

Filed Aug. 16, 1982, Ser. No. 408,716

Claims priority, application Japan, Oct. 26, 1981, 56-170951

Int. Cl.³ B01D *47/02*

U.S. Cl. 261—77 **3 Claims**



1. A multistage water purifier comprising:

an upper stage water purifier constituted by an upper pumping sleeve, a plurality of upper suction pipes opening into said upper pumping sleeve, a buoyancy chamber provided on the upper end of said upper pumping sleeve, a plurality of floats above the upper end of said upper pumping sleeve, connecting members connecting said floats to the upper end of said upper pumping sleeve for maintaining the upper end of said upper pumping sleeve a predetermined distance below said floats, and an intermittent air supplying means in the lower portion of said upper pumping sleeve for intermittently supplying air into said pumping sleeve; and

a lower stage water purifier constituted by a lower pumping sleeve, a plurality of lower suction pipes opening into said lower pumping sleeve, an arcuate deflector attached to the upper end of said lower pumping sleeve, an intermittent air supplying means in the lower end portion of said lower pumping sleeve for supplying air intermittently into said lower pumping sleeve, a weight, and a chain means connecting said weight to the lower end of said lower pumping sleeve, the upper end of said lower stage water purifier being connected to the lower end of said upper stage water purifier;

said intermittent air supplying means of at least said upper stage water purifier having an air chamber for feeding air intermittently, said air chamber including an outer cylinder having a top plate, an inner cylinder having a bottom plate and positioned in said outer cylinder and spaced from the inner surface of the wall thereof, an air relief pipe attached to and opening upwardly through said top plate into said upper pumping sleeve and extending downwardly into said inner cylinder to a point spaced from and opposed to the bottom plate of said inner cylinder, and an air supplying tube connected to said outer cylinder for supplying pressurized air thereinto, said air relief pipe being sufficiently large to discharge into said upper pumping sleeve a bubble of air sufficient to substantially fill said upper pumping sleeve.

4,436,676

COOLING PLANT

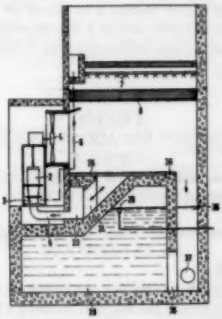
Klaus Gebke, Gelnhausen; Friedrich Hühn, Offenbach, and Rolf Lekutat, Neu-Isenburg, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Mar. 2, 1982, Ser. No. 353,882

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1981, 3108855

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—151 **2 Claims**



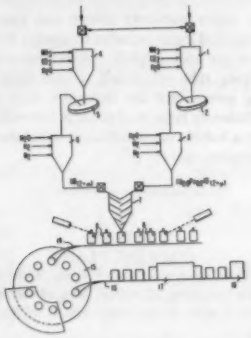
1. Plant for cooling water circulating in a secondary cooling loop, comprising a plurality of parallel operating cooling cells each having a blower, a drive motor for said blower and a cooling water pump having a suction side, said cooling water pumps of said cooling cells being separately drivable, a cold water basin connected to said cooling cells, a secondary cooling water pump connected to said cold water basin, a heat exchanger connected to said secondary cooling water pump, a warm water basin being connected to said heat exchanger, being directly connected to said suction side of said cooling water pumps and being disposed upstream of said cold water basin, and means disposed between said warm water basin and said cold water basin for providing an overflow therebetween, said warm water basin including a main basin in the form of a canal-like trough being substantially closed on all sides thereof and a secondary basin being disposed at a higher level than said main basin and being connected downstream thereof, said secondary basin being in the form of a shallow cup forming a cold water collecting basin upstream of said cold water basin, and said overflow means being part of said secondary basin providing overflow between said secondary basin and said cold water basin.

4,436,677

NUCLEAR FUEL FABRICATION PROCESS

Kenneth C. Radford, Churchill, and Don E. Harrison, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 2, 1982, Ser. No. 403,969
Int. Cl.³ G21C 21/00
U.S. Cl. 264—0.5 17 Claims



1. A method of making a pellet from a powder comprising:
(A) placing said powder in a heat-shrinkable self-supporting bottle;
(B) sealing said self-supporting bottle;
(C) isostatically pressing said self-supporting bottle at a temperature which causes it to shrink at about the same rate that the powder within it is compressed; and
(D) decomposing said self-supporting bottle and sintering said powder.

4,436,678

METHOD FOR HOT REPAIRING THE INSIDE OF A FURNACE

Yasuo Nishikawa, and Hirokuni Takahashi, both of Okayama, Japan, assignors to Kyusyu Refractories Co., Ltd., Okayama, Japan

Filed Jun. 23, 1981, Ser. No. 276,636
Int. Cl.³ F27D 1/16
U.S. Cl. 264—30 5 Claims

1. A method for hot repairing the inside of a high temperature furnace comprising the steps of forming a hot repair material in the state of a slurry by adding 10–15 weight % of water to a monolithic refractory material composed mainly of a refractory material and a binder, or a refractory in admixture with carbon containing granulated particles and additionally a binder; directing and compacting said repair material into portions necessitating repairs in the high temperature furnace; allowing the water in said repair material to boil; and hardening said monolithic refractory material by said boiling operation; said monolithic refractory material having a particle size composition of coarse particles of 1–10 mm in the range of 10–70 weight %, ultrafine particles below 0.063 mm in the range of 10–50 weight % and particles of 1–0.063 mm for the residual part.

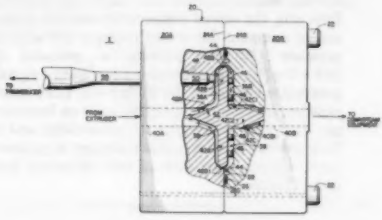
4,436,679

METHOD AND APPARATUS FOR GENERATING FOAMED THERMOPLASTIC MATERIALS

Thomas W. Winstead, Baltimore, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Filed Nov. 9, 1981, Ser. No. 319,403
Int. Cl.³ B29D 27/00
U.S. Cl. 264—40.3 49 Claims

1. The method of entraining gas as a blowing agent in a thermoplastic melt to provide foamed thermoplastic extrudate, comprising:
providing an extruded flowing mass of thermoplastic melt;
constraining the flow of said melt into a tubular configuration over a finite distance;
impinging an annular sheet-like flow of gas under pressure on said tubular configuration of melt substantially transversely of the direction of flow thereof to entrain said gas in said melt;



subsequently returning said melt with entrained gas to a flowing mass configuration;
controlling the flow rate and temperature of said flowing mass with entrained gas to optimum values for subsequent extrusion; and
extruding said flowing mass with entrained gas to produce said foamed thermoplastic extrudate

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4,436,680

PROCESS FOR PRODUCING GRANULAR, FIRE-RESISTANT MATERIAL

Axel Eschner, Wiesbaden; Rudolf Ganz, Mainz-Gonsenheim; Günter Tkotz, Wiesbaden; Hermann Stein, Bad Dürkheim, and Klaus Kreuels, Eltville, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Feb. 16, 1982, Ser. No. 349,247
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1981, 3105579
Int. Cl.³ C04B 21/06
U.S. Cl. 264—60 25 Claims

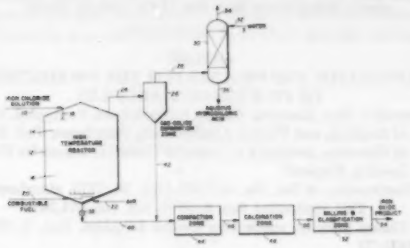
1. A process for producing a granular, fire-resistant material, which comprises:
mixing 100 parts by weight of ceramic fibers, 2 to 15 parts by weight of at least one member selected from the group consisting of clay, Al_2O_3, SiO_2, aluminum hydroxide, magnesium oxide, titanium dioxide and chromium oxide, 1 to 8 parts by weight, as P_2O_5, of a phosphate bonding agent, and about 2 to about 25 parts by weight of water, to form a substantially uniformly dispersed mixture,
compacting said mixture by a volume coefficient of at least 3,
subjecting said compacted mixture to at least one heat-treatment selected from the group consisting of drying at 110° to 180° C., heat-treating at 250° to 600° C., and firing at 800° to 1550° C., and
granulating the thus heated product.

4,436,681

PROCESS FOR PRODUCING IRON OXIDE WEIGHTING MATERIAL FROM IRON CHLORIDE SOLUTIONS

Virgil J. Barczak, 2500 NW. 109th St., Oklahoma City, Okla. 73120; Haywood A. Perkins, 2905 Crown Colony Ct., Mobile, Ala. 36609, and O. L. Daigle, 2716 NW. 59th St., Oklahoma City, Okla. 73112

Filed May 17, 1982, Ser. No. 378,784
Int. Cl.³ B28B *11/00*
U.S. Cl. 264—67 4 Claims



1. A process for preparing a weighting material adapated for use in a drilling fluid which comprises:

A. compacting a particulate iron oxide byproduct formed during the regeneration of aqueous hydrochloric acid from an iron chloride solution to reduce the porosity thereof and to increase the pour density thereof to at least 85 pounds per cubic foot and the tap density thereof to at least 100 pounds per cubic foot,

B. calcining said compacted iron oxide byproduct at temperatures in the range of from about 900° C. to about 1300° C. for a period of time sufficient to sinter said compacted iron oxide byproduct and reduce the surface area of said byproduct to less than about 10 square meters per gram and thereafter

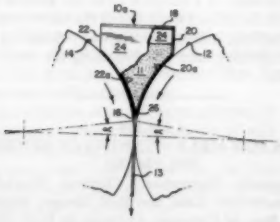
C. grinding said calcined byproduct to a predetermined particle size.

4,436,682

ROLL COMPACTING OF POLYMER POWDERS INTO FULLY DENSE PRODUCTS

Walter V. Knopp, Wyckoff, N.J., assignor to Revere Copper and Brass, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 216,646, Dec. 15, 1980, abandoned. This application Nov. 12, 1981, Ser. No. 320,432
Int. Cl.³ B28B *1/08*
U.S. Cl. 264—70 6 Claims



1. A process for producing a polymer film comprising:

(a) storing a supply of a polymer powder;

(b) feeding a free falling stream of the powder between a pair of spaced rollers;

(c) metering the stream of powder fed between the rollers;

(d) heating the powder;

(e) rotating the rollers;

(f) compressing the powder between the rollers to compact and to coalesce the powder into a film;

(g) drawing the film from between the rollers;

(h) maintaining the circumferential speed of the rollers essentially equal to the linear speed of the film drawn from between the rollers; and

(i) applying tension to the film drawn from between the rollers to produce a flat film.

4,436,683

METHOD FOR FABRICATING AN INFORMATION SIGNAL RECORDED MEDIUM OF THE ELECTROSTATIC CAPACITY TYPE

Yoshiki Nishihara, Yokohama, and Kazumichi Miyamoto, Ichikawa, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Oct. 29, 1982, Ser. No. 437,679
Claims priority, application Japan, Nov. 2, 1981, 56-174513
Int. Cl.³ B29D *17/00*
U.S. Cl. 264—107 6 Claims

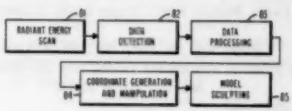
1. A method for fabricating an information signal recorded medium of the electrostatic capacity type which comprises providing a conductive resin composition comprising a vinyl chloride resin, about 1.5 to 10 parts by weight of a stabilizer for the copolymer resin, about 0.1 to 1.5 parts by weight of a silicone oil and about 15 to about 70 parts by weight of a carbon black conductive material, each based on 100 parts by weight of the vinyl chloride resin, kneading the conductive resin composition at a temperature sufficient for melting the copolymer resin, and press molding the kneaded composition in such a way that intended information signals are recorded in geometrical patterns to give a recorded medium, the conductive resin composition being applied with about 0.4 to 25 parts by weight of water per 100 parts by weight of the resin prior to or during the kneading, the kneading being continued until the applied water is substantially removed.

4,436,684

METHOD OF FORMING IMPLANTABLE PROSTHESES FOR RECONSTRUCTIVE SURGERY

David N. White, Palo Alto, Calif., assignor to Contour Med Partners, Ltd., Mountain View, Calif.

Filed Jun. 3, 1982, Ser. No. 384,646
Int. Cl.³ B23Q *15/14*
U.S. Cl. 264—138 31 Claims



1. A method of fabricating a three dimensional corporeal model of a structure internal to a body, comprising:

subjecting the body to radiant energy to produce radiant energy responses internal to said body, the radiant energy selected to produce radiant energy responses that are characteristic of a selected physical property of substances detectable exterior of the body;

detecting produced radiant energy responses to obtain representations of substances at locations internal to the body defining structures internal to said body three-dimensionally;

generating from the representations of the substances a set of three dimensional coordinates defining a three dimensional representation of a selected structure internal to the body; and

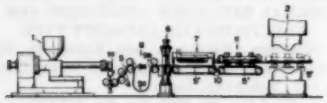
directing a sculpting tool into a workpiece in accordance with the generated set of three dimensional coordinates to form a corporeal model corresponding to the three dimensional representation of the selected structure.

4,436,685

CONTINUOUS PRESS FORMING METHOD FOR SHEET RESIN

Koji Emura; Tuneo Suzuki, and Hidemichi Kazama, all of Fuji, Japan, assignors to Yamakawa Industrial Company, Limited, Shizuoka, Japan

Filed May 20, 1982, Ser. No. 380,434
Claims priority, application Japan, Dec. 1, 1981, 56-193454
Int. Cl.³ B29C 17/14
U.S. Cl. 264—148 11 Claims



1. A continuous method for press forming a sheet resin, which comprises the steps of:

(a) continuously extruding molten resin from a supply source for the molten resin,

(b) subjecting the extruded molten resin to a sheet forming to obtain a softened sheet resin strip synchronously with the extrusion of the molten resin from the supply source,

(c) subjecting the softened resin to a primary thermal control step whereby the temperature of the resin sheet is regulated so that it possesses the necessary surface stiffness and thermoplasticity to be subsequently cut into pieces of a fixed length,

(d) cutting the thus temperature regulated sheet resin strip into sheet resin pieces of a fixed length,

(e) subjecting the sheet resin pieces to a secondary thermal control so that they possess the necessary thermoplasticity and surface stiffness so it can be subsequently press formed,

(f) intermittently injecting said sheet resin pieces of a fixed length into a press forming machine, and

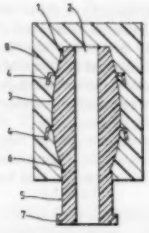
(g) clamping said sheet resin pieces by use of the press forming machine synchronously with the injection of the sheet resin pieces into the press forming machine, whereby all the steps can be subjected to one consecutive operation.

4,436,686

METHOD OF MANUFACTURING LEVEL VIALS

Michael Drori, Mobile Post - Upper Galil, Kibbutz Hagoshrim, Israel

Filed Sep. 16, 1982, Ser. No. 419,036
Claims priority, application Israel, Sep. 25, 1981, 63934
Int. Cl.³ B29D 23/02
U.S. Cl. 264—163 5 Claims



1. A method of manufacturing level vials comprising the steps of:

a. molding a core of an opaque thermoplastic material around a pin member in a conventional double-injection molding machine, the resulting core having a barrel-like shape and at least two spaced external integral thin annular ribs,

b. transferring said core into a second suitable mold in the same machine and molding a vial body around it of transparent thermoplastic material,

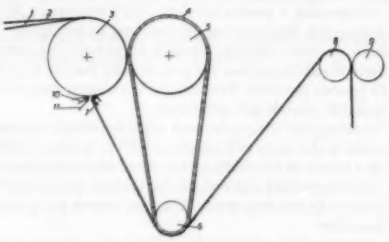
c. removing said vial body from said machine after cooling and withdrawing said pin member from the core and then said core from the vial body, whereby said ribs are severed from the core and remain in said body, to form bubble indicia, the softening temperature of said transparent plastic being lower than that of the opaque plastic.

4,436,687

APPARATUS AND PROCESS FOR THE PRODUCTION OF PILE SURFACE ARTICLES

Donald J. Bye, Runcorn; Harold P. Stanistreet, Pontypool, both of England, and Werner Lindenstruth, Oestringen, Fed. Rep. of Germany, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 417,597, Nov. 20, 1973, abandoned.
This application Sep. 8, 1975, Ser. No. 611,243
Claims priority, application United Kingdom, Dec. 4, 1972, 55831/72
Int. Cl.³ B29C 17/02
U.S. Cl. 264—164 5 Claims



1. A process for the production of a pile surfaced product comprising feeding a thermoplastic material against a substantially smooth surfaced roll heated to a temperature above the softening point of the thermoplastic material and a paper backing against the thermoplastic so that the thermoplastic material adheres to the surface and bonds to the backing, withdrawing the laminate of the backing and the thermoplastic material from the roll so that fibrils are drawn out from thermoplastic material between the surface of the roll and the backing in a fibril forming area, the laminate being withdrawn over a rod or bar having a radius of curvature of between 1½ and 5 millimeters and being positioned transverse to the direction of movement of the laminate at a distance from the surface of the roll greater than the combined thickness of the thermoplastic material and the backing, cooling the fibrils by directing a coolant into the fibril forming area and disjoining the fibrils from the heated surface.

4,436,688

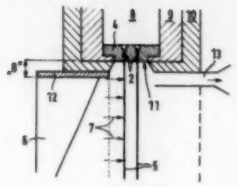
PROCESS FOR MELT-SPINNING OF SYNTHETIC POLYMERS

Gunter Koschinek, Dietzenbach; Dietmar Wandel, Hanau; Bernd Kretschmann, Kahl, and Rolf Zinsser, Heusenstamm, all of Fed. Rep. of Germany, assignors to Davy McKee Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,780
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1980, 3036683
Int. Cl.³ D01D 5/08
U.S. Cl. 264—176 F 6 Claims

1. In a process for melt-spinning of synthetic polymers selected from the group consisting of polyamide 6, polyamide 66,

polyester and their copolymers into filaments wherein the polymer is melt-spun through orifices, said orifices being located in a spinneret, said spinneret being of a substantially planar bottom surface, thereby forming said filaments, said filaments being allowed to emerge from said spinneret and drop into a blowing duct, said blowing duct having an uppermost blow point, said filaments being subjected to a current of air flowing in a direction normal to the filaments and cooled in a cooling zone, said cooling zone being located below said uppermost blow point, said filaments being moistened and prepared and then withdrawn at a speed of between 600 and 6000 meters/min., said uppermost blow point and said surface



of said spinneret having a distance "D" therebetween and defining a quiescent zone, said distance "D" being selected so that said distance is within a range, said range having an upper limit and a lower limit, the improvement in which said upper limit is defined by a relation "B," wherein $B=48.2\ (\log v)-109$ (mm), and said lower limit is defined by a relation A_1, A_2 or A_3 wherein

$A_1=34.4(\log v)-71$ (mm) and applies to a spinneret load of less than 0.5 g/min/cm^2

$A_2=-32(\log v-3.356)^2+34$ (mm) and applies to a spinneret load of 0.5−1.8 g/min/cm^2

$A_3=-44(\log v-3.221)^2+32$ (mm) and applies to a spinneret load greater than 1.8 g/min/cm^2,

wherein "v" is the spinning withdrawal speed in meters/min.

4,436,689

PROCESS FOR THE PRODUCTION OF POLYMER FILAMENTS HAVING HIGH TENSILE STRENGTH

Paul Smith, Wilmington, Del.; Pieter J. Lemstra, Brunssum, Netherlands; Robert Kirschbaum, Sittard, Netherlands, and Jacques P. L. Pijpers, Limbricht, Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Oct. 18, 1982, Ser. No. 434,829

Claims priority, application Netherlands, Oct. 17, 1981, 8104728

Int. Cl.³ D01F 6/00

U.S. Cl. 264—204 **15 Claims**

1. An improved process for the preparation of polyethylene filaments having a high tensile strength and modulus by spinning a solution of linear high-molecular weight polyethylene and thereafter stretching the filament thus formed, the improvement essentially comprising:

spinning a solution of an ethylene polymer or copolymer at a temperature above the gel point of said solution, said solution containing at least 80 percent by weight solvent, and wherein said ethylene polymer or copolymer

contains at least 5 percent by weight of at least one alkene having 3 to 8 carbon atoms;

has a weight-average molecular weight Mw greater than 4×10^5 k/kmole; and

has a weight/number average molecular weight ratio Mw/Mn lower than 5;

cooling the spun polymer solution to a temperature below its gel point to form a gel filament; and

stretching said gel filament under conditions such that a polymer filament having a tensile strength of at least 1.5 GPa at room temperature is formed.

4,436,690

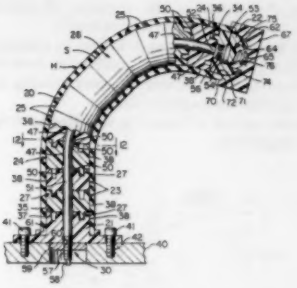
CURVED MANDREL FOR CURING POLYMERIC HOSE AND METHOD

Richard F. Davis, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 86,984, Oct. 22, 1979, Pat. No. 4,298,330. This application Oct. 28, 1981, Ser. No. 315,698

Int. Cl.³ B29H 5/18

U.S. Cl. 264—313 **4 Claims**



1. In a method of making a curved mandrel for supporting an uncured polymeric hose during curing to define a corresponding curved configuration in the cured hose; the improvement comprising the steps of; forming a plurality of substantially cylindrical members each having opposed end faces with a first type of said members each having said opposed end faces thereof disposed in substantially parallel relation and with a second type of said members each having said opposed end faces disposed in substantially non-parallel relation; disposing said plurality of members in end-to-end relation so as to be adapted to be relatively rotated to define the configuration of said mandrel including predetermined curve means therein; interlocking said members with interlocking means which interlock the members in only one position to define said configuration and curve means; and holding said members with readily attachable and detachable holding means enabling holding said members axially against each other after interlocking thereof; said members with said interlocking means and holding means being adapted to, provide a substantially straight mandrel for easy installation of an uncured straight hose therearound, define said configuration and curve means in said mandrel and uncured hose by relatively rotating said members, and provide looseness and axial spacing between members to enable easy withdrawal of the cured curved hose from around said members.

4,436,691

METHOD AND APPARATUS FOR THE FORMATION OF A SPHEROMAK PLASMA

Stephen C. Jardin, Princeton; Masaaki Yamada, Lawrenceville; Harold P. Furth, and Mitcheo Okabayashi, both of Princeton, all of N.J., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 24, 1981, Ser. No. 246,976

Int. Cl.³ G21B 1/00

U.S. Cl. 376—137 **14 Claims**

1. In a method for producing and confining a plasma which includes the steps of:

evacuating a vacuum vessel and filling said vessel with a neutral species;

producing a first poloidal magnetic field within said vacuum vessel;

producing a second poloidal magnetic field in said vacuum vessel by pulsing a current in a first direction through a poloidal field generating coil, the poloidal field generating

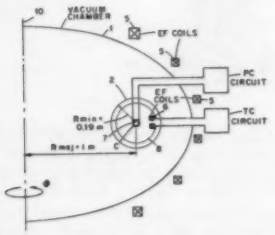
coil located in a toroidal shaped flux core which is enclosed within a housing, such that said first and said second poloidal magnetic fields are superimposed to form a composite poloidal field in said vacuum vessel having regions of stronger and weaker strength;

producing a toroidal magnetic field in said vacuum vessel by passing a current through a toroidal field generating coil which is located in said flux core, thereby initiating a plasma discharge and causing toroidal flux to appear outside of said flux core;

expanding the plasma in the direction of said region of weaker poloidal magnetic field strength;

producing an equilibrium magnetic field by passing a current through at least one external equilibrium field coil which is positioned outside of said flux core housing so as to set up an equilibrium magnetic field;

an improved method of detaching said plasma from said flux core, comprising:



producing, as part of the step of producing said second poloidal field, a composite magnetic field having field lines tangential to an outer surface of said flux core including the step of passing a current through an interior equilibrium field coil located inside of said flux core housing, so as to contribute to said equilibrium magnetic field; and

reversing simultaneously the directions of currents in the poloidal field and the toroidal field generating coils such that a resultant normal component V_n of the velocity of said plasma away from said flux core is approximately zero, said normal velocity component V_n being characterized by the equation $V_n = E_p B_t - E_t B_p$, where E_t and B_p are electric and magnetic fields, respectively, set up by said poloidal field generating coil and where B_t and E_p are magnetic and electric fields, respectively, set up by said toroidal field generating coil, to pinch off at least most of said expanded plasma so as to cause poloidal magnetic field line reconnection within the pinched-off portion, thereby producing a detached plasma.

4,436,692

PLUG FOR REACTOR PRESSURE VESSEL NOZZLE

Donald D. Stenabaugh, Danbury, Conn., assignor to Automation Industries, Inc., Greenwich, Conn.

Filed Feb. 10, 1982, Ser. No. 347,509
Int. Cl.³ G21C *19/04*
U.S. Cl. 376—204 **13 Claims**

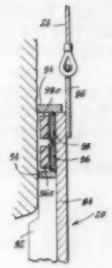
1. The method of plugging an underwater nozzle opening in a vertical sidewall of a cylindrical nuclear reactor vessel containing a core shroud radially displaced from said sidewall to form an annular space, said annular space containing jet pumps therein spaced from said sidewall, which comprises:

providing a substantially disk shaped plug having a diameter sufficient to cover said nozzle opening and curved to match the curve of said sidewall, means on one surface of said plug for sealing against said sidewall around said nozzle opening, and cylinder/piston means carried by the other side of said plug;

lowering said plug as it hangs vertically from a first cable into said annular space above said jet pumps and laterally displaced from vertical alignment with said nozzle;

pushing said cable toward said sidewall until said plug is vertically aligned with the space between said sidewall and said jet pumps;

lowering said plug on said first cable into the space between said sidewall and said jet pumps;



laterally shifting said plug into vertical alignment with said nozzle while shifting the weight of said plug to a second cable;

lowering said plug on said second cable into alignment with said nozzle opening; and

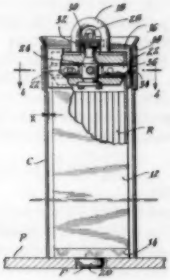
actuating said cylinder/piston means to force said plug away from said core shroud and into sealing engagement over said nozzle opening.

4,436,693

NON-IMPACTING LOOSE ROD STORAGE CANISTER

Louis J. Zezza, Ossining, N.Y., and Iqbal Husain, Brookfield, Conn., assignors to Automation Industries, Inc., Greenwich, Conn.

Filed Sep. 18, 1981, Ser. No. 303,410
Int. Cl.³ G21C *19/20*
U.S. Cl. 376—272 **6 Claims**



1. In combination with a nuclear fuel rod elongated storage cell having an open upper end, side walls, and a bottom wall formed with a central hole, a fuel rod canister contained within said cell comprising

(a) an elongated body having an open upper end and a closed lower end,

(b) a support pin extending downwardly from the closed lower end of the body and fitted within the central hole in the bottom wall of the cell to restrain the lower end of the body against lateral movement,

(c) a cap on the open upper end of the body, and

(d) means for securing the cap to the body,

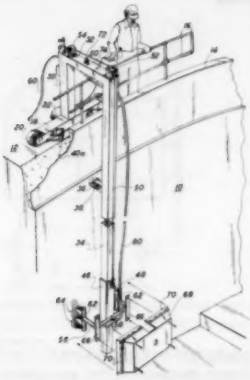
(e) the cap being closely spaced from and contained against substantial lateral movement by the side walls of the cell.

4,436,694

NUCLEAR REACTOR CAVITY DECONTAMINATION MACHINE

Michael Vassalotti, New Milford, Conn., and Alvaro Obligado, Waccabuc, N.Y., assignors to Automation Industries, Inc., Greenwich, Conn.

Filed Aug. 31, 1981, Ser. No. 297,554
Int. Cl.³ G21C 19/20
U.S. Cl. 376—310 10 Claims



1. Apparatus for decontaminating the inside walls of a nuclear reactor cavity in a refueling floor, having a raised curb around its periphery which comprises:

a chassis having wheels in rolling contact with said floor;

first and second curb wheels mounted on said chassis in horizontal rolling contact with said curb;

a support member extending upwardly and laterally from said chassis;

an elongated mast depending from said support member and into the reactor cavity;

at least one reaction wheel carried by said mast for horizontal rolling engagement with the cavity wall;

a carriage vertically positionable along said elongated mast; and

means carried by said carriage for spraying decontaminating fluid on said cavity wall.

4,436,695

LARGER CONTAINED NUCLEAR EXPLOSION BREEDER REACTOR SYSTEMS

Edward F. Marwick, 5149 Dobson St., Skokie, Ill. 60077

Continuation-in-part of Ser. No. 40,849, May 21, 1979, Pat. No. 4,344,913, which is a continuation-in-part of Ser. No. 953,166, Oct. 20, 1978, Pat. No. 4,216,058, which is a continuation-in-part of Ser. No. 810,894, Jun. 28, 1977, Pat. No. 4,121,971. This application Apr. 7, 1980, Ser. No. 137,849
Int. Cl.³ G21C 1/02
U.S. Cl. 376—317 39 Claims

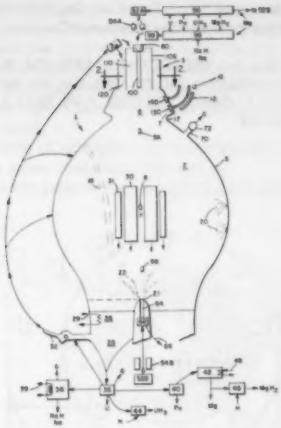
14. Apparatus for producing useful energy, said apparatus comprising:

a large chamber;

means for introducing nuclear explosive means for descent into said chamber;

means for causing an explosion of said nuclear explosive means at a predetermined point in said chamber;

means for introducing a plurality of substantially contiguous free-falling liquid masses for descent into said chamber such that at the instant of nuclear explosion said nuclear



explosive means is substantially surrounded by said plurality of masses; and

means for introducing spray into said chamber.

4,436,696

PROCESS FOR PROVIDING A UNIFORM CARBON DISTRIBUTION IN FERROUS COMPACTS AT HIGH TEMPERATURES

Daniel M. Buck; Alan T. Sibley, both of Allentown, and John J. Kaiser, Catasauqua, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 20, 1981, Ser. No. 265,512
Int. Cl.³ B22F 3/00
U.S. Cl. 419—57 8 Claims

1. A process for high temperature sintering which provides a substantially uniform carbon distribution in a ferrous powder metallurgy compact, which process comprises:

(a) heating the ferrous powder metallurgy compact in the heating zone of a sintering furnace to a temperature of at least 2,200° F.,

(b) introducing into the heating zone an atmosphere comprising about 2 to less than 10 volume percent hydrogen, about 0.5 to 2.0 volume percent carbon monoxide, about 0.5 to 1.0 volume percent methane, the level of either the carbon monoxide or the methane being at least slightly greater than 0.5 volume percent when the other is about 0.5 volume percent and the hydrogen is about 2 volume percent, and the balance nitrogen, and

(c) removing the sintered compact.

4,436,697

SOLDERING ALLOY

Ronald Friedrich, Kamp-Lintfort, and Manfred Müller, Essen, both of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Sep. 23, 1982, Ser. No. 422,193
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1981, 3145944
Int. Cl.³ C22C 19/07, 30/00
U.S. Cl. 420—440 4 Claims

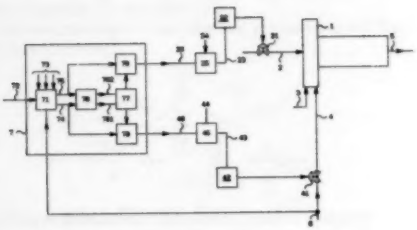
1. Soldering alloy comprising 25 to 35% iron, 15 to 25% chromium, 3 to 6% silicon, 1 to 4% molybdenum, and the remainder essentially cobalt.

4,436,698

FEED FORWARD CARBON BLACK REACTOR CONTROL

Galen D. Stacy, and Merle R. Likins, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 195,710, Oct. 9, 1980, Pat. No. 4,355,016.
This application Jul. 23, 1982, Ser. No. 401,279
Int. Cl.³ G05D 7/00; C09C 1/48; B01J 4/00
U.S. Cl. 422—62 1 Claim



1. An apparatus for producing carbon black comprising

a. a carbon black reactor having

aa. an essentially cylindrically shaped housing,

bb. means for introducing hydrocarbon feed at or near the axis of the housing and in essentially the axial direction,

cc. means for introducing a fuel into said reactor,

dd. means for introducing a free oxygen-containing gas into said reactor,

ee. means for introducing hot combustion gases obtained by the combustion of said fuel and free oxygen-containing gas in essentially tangential direction into said housing,

ff. means for withdrawal of carbon black containing smoke from said housing,

b. a humidity signal generator for determining the content of water in the free oxygen-containing gas entering the carbon black reactor,

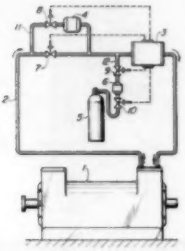
c. an automatic double control unit operatively connected to said humidity signal generator and receiving said humidity signal, said unit being capable of converting said humidity signal into a feed control signal and into an oxygen control signal, each of said control signals being automatically computed by said unit in such a way that a manipulation of the feed flow or respectively the flow of free oxygen-containing gas responsive to the respective control signal keeps one carbon black property or respectively carbon black process property essentially constant, said unit being further equipped with select means capable of selecting that one of said control signals for a respective manipulation which causes the larger conversion of the feed to carbon black, said double control unit being operatively connected to both a manipulator in the means for introducing hydrocarbon feed and a manipulator in the means for introducng free oxygen-containing gas such as to allow the manipulation of either the hydrocarbon feed or the flow of free oxygen-containing gas into the carbon black reactor responsive to the respective control signal.

4,436,699

MONITORING SYSTEM FOR CHECKING ELECTRIC ROTARY MACHINE FOR LOCAL OVERHEATING

Kiyoshi Narato, Ibaraki; Keizou Ohtsuka, Hitachi; Tooru Inada, Hitachi, and Takashi Watanabe, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 8, 1981, Ser. No. 271,356
Claims priority, application Japan, Sep. 6, 1980, 55-122946
Int. Cl.³ G01N 15/00, 27/00, 33/44
U.S. Cl. 422—68 2 Claims



1. A monitoring system for checking for local overheating of an electric rotary machine of the gas-cooled type, with the machine including parts covered with organic insulating material tending to undergo pyrolysis when exposed to elevated temperatures, the system comprising:

a sensing means for sensing a concentration of minuscule particles in a coolant gas for the electric rotary machine, the electric rotary machine being determined as having a local overheating when a predetermined level is exceeded by the concentration of the minuscule particles as sensed by said sensing means;

test gas supply means for supplying liquified carbon dioxide connected to said sensing means, said test gas supply means being operative to feed the liquified carbon dioxide into said sensing means thereby causing the sensing means to perform a sensing operation, to thereby determine whether or not the sensing means is functioning normally;

a passage means for feeding coolant gas from the electric rotary machine into said sensing means, said passage means comprising a first passage for directly feeding the coolant gas from the electric rotary machine into the sensing means, and a second passage for feeding the coolant gas from the electric rotary machine into the sensing means through a filter means for removing minuscule particles from the coolant gas to provide the sensing means with a gas free from minuscule particles;

a liquid atomizing device communicating with said second passage at a position downstream of said filter means for injecting the liquified carbon dioxide as atomized particles into the gas free from the minuscule particles; and

switch means for switching a direction of flow of the coolant gas between the first passage and the second passage, said switch means being adapted to allow the coolant gas to flow through the first passage when the coolant gas flowing through the electric rotary machine is sensed by the sensing means to determine a concentration thereof, and to allow the coolant gas to flow through the second passage when the gas free from the minuscule particles is provided by the filter means and the liquified carbon dioxide is injected as atomized particles by the liquid atomizing device into the filtered gas to provide a test gas so that the test gas is fed into the sensing means to determine whether or not the sensing means is functioning normally.

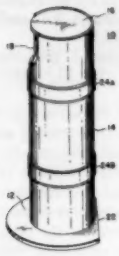
4,436,700
AUTOCLAVABLE PIPETTE JAR AND METHOD OF USING IT

Eric D. Erickson, Lincoln, Nebr., assignor to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Continuation-in-part of Ser. No. 177,013, Aug. 11, 1980, abandoned. This application Jan. 4, 1982, Ser. No. 336,895

Int. Cl.³ A61L *2/00, 2/26;* B65D *25/00*

U.S. Cl. 422—102 6 Claims



1. A two-position autoclavable container comprising:

walls of autoclavable material forming a compartment for holding pipettes;

said walls of autoclavable material being shaped to form a base, a side wall and a top of said container with the base, side wall and top at least partly defining and enclosing said compartment;

said base having a flat bottom surface, whereby said container may be supported thereon in a first stable position;

said side wall being tubular and extending upwardly from said base;

constraint means for preventing said container from rolling when it rests in a second stable position where it is not supported by the flat bottom surface, whereby said container may be supported in the second stable position and wherein said constraint means includes a straight resting edge which extends as a side of said base, with the base being otherwise generally disc shaped;

said base, side wall and top having a continuous portion, whereby said pipette jar may hold a liquid when resting in either said first or said second stable position; and

said side wall having an opening immediately adjacent to said top and located on the opposite side of said compartment from said straight resting edge, whereby said opening is near the top of said compartment and pipettes can be inserted through said opening with said container resting in a selected one of said first or said second stable positions to permit said container to be placed in an autoclave in either of said two positions while holding a liquid.

4,436,701
ADSORPTION REACTOR AND METHOD FOR REMOVING SO_2 FROM WASTE GASES

Ekkehard Richter, Essen, and Martin Reinke, Dortmund, both of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 427,270

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 3138665

Int. Cl.³ F01N *3/10*

U.S. Cl. 422—173 8 Claims

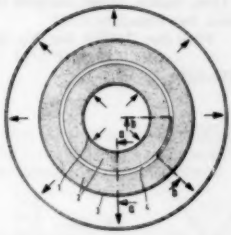
1. An adsorption reactor for removing SO_2 and the like from waste gases, comprising

a single bed of a grained adsorption medium moving in a substantially downward direction and arranged so that waste gases pass through said bed in a gas flow direction transversely of the adsorption medium movement direction; and

a temperature separating permeable member formed by heat exchanger tubes inserted in said single bed of a grained adsorption medium and subdividing said single bed into at least a first adsorption layer located upstream of said heat exchanger pipes in said gas flow direction so that waste gases pass said first adsorption layer at a higher temperature, and a second adsorption layer located transversely adjacent to said first adsorption layer and downstream of said heat exchanger pipes in said gas flow direction so that the waste gases pass second adsorption layer at a lower temperature.

5. A method of adsorption for removing SO_2 and the like from waste gases, comprising the steps of

passing waste gases through a single bed of a grained adsorption medium moving from above downwardly, in a gas passage direction transversely of the adsorption medium movement direction; and



arranging a temperature separating permeable member formed by a heat exchanger in the bed of the grained adsorption medium and subdividing said single bed into at least a first adsorption layer located upstream of the heat exchanger pipes in said gas flow direction so that waste gases pass said first adsorption layer at a higher temperature, and a second adsorption layer located transversely adjacent to said first adsorption layer and downstream of said heat exchanger pipes on said gas flow direction so that the waste gases pass second adsorption layer at a lower temperature.

4,436,702
REACTOR FOR HYDROGENATING COAL SLURRY

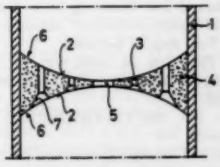
Rudi Schulz, Fussgoenheim; Hubert Puestel, Mutterstadt; Georg Weber, Ludwigshafen, and Heribert Kuerten, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 11, 1982, Ser. No. 338,244

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1981, 3103081

Int. Cl.³ B01J *8/04*

U.S. Cl. 422—195 5 Claims



1. A multi-stage reactor for hydrogenating coal slurry under pressures of up to 700 bar, preferably of up to 350 bar, comprising a closed pressure vessel having inlets for gas and coal slurry through the reactor bottom, an outlet for sludge, gases and vapors in the reactor top, and at least 4 dividing trays in

the pressure vessel, by means of which trays the individual reaction stages are separated from one another, wherein each dividing tray has a progressively reducing cross-section comprising two opposed shells of conical, elliptical or hemispherical shape, with passage orifices, spaced over its entire lower face, so as to prevent coal slurry caking onto the tray in the direction of flow of the gas and coal slurry reactants, said passage of orifices having inlets on the face of the lower shell which are reduced in cross-section with upward distance, the space between said shells being filled with a ceramic mass, and said shells having a multiplicity of small holes therein.

4,436,703

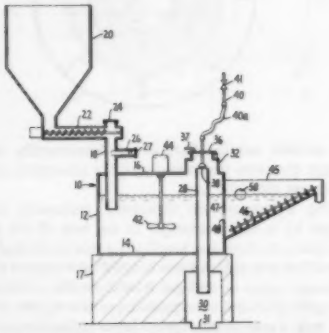
LIME SLAKER

Stanley C. Lane, Seattle, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Dec. 7, 1981, Ser. No. 328,272

Int. Cl.³ B01F *3/12*

U.S. Cl. 422—225 **8 Claims**



1. In a lime slaker comprising a vessel, means for maintaining a desired level of liquor in the vessel, and a vent pipe for allowing excess hot vapor in the vessel to escape, the improvement wherein the vent pipe is a substantially vertical pipe extending from a point within the vessel above the desired level of liquor and through the bottom of the vessel to a space below the vessel, with the outlet of the vent pipe being below the vessel, and a shower head for spraying water into the vent pipe is disposed at the inlet end of the vent pipe, the shower head being connected to means for supplying water to the shower head, whereby the water sprayed into the vent pipe flows into the space below the vessel and drains therefrom.

4,436,704

METHOD OF RECOVERING URANIUM OXIDE FROM ALKALINE SODIUM URANYL CARBONATE SOLUTIONS

Otmar Krennrich, Oberursel; Gottfried Brendel, and Hartmut Pietsch, both of Bad Homburg, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 24, 1982, Ser. No. 391,865

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1981, 3128855

Int. Cl.³ C01G *43/025*

U.S. Cl. 423—11 **6 Claims**

1. A method of recovering uranium dioxide from an alkaline sodium uranyl carbonate solution which comprises the steps of:

heating said solution to a temperature above its boiling point at atmospheric pressure and bringing said solution to a superatmospheric pressure;

reacting said solution at said temperature and under superatmospheric pressure with particulate metallic iron forming a reducing agent, thereby precipitating uranium dioxide; and

recovering the precipitated uranium dioxide from the solution.

4,436,705

EXTRACTING CHROMIUM (III) FROM AQUEOUS SOLUTIONS WITH 2-ETHYLHEXYL ACID PHOSPHATE

Dale E. Lyman, Bumpass, Va., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 1, 1983, Ser. No. 518,994

Int. Cl.³ C01G *37/00*

U.S. Cl. 423—54 **10 Claims**

1. A process for the extraction of chromium (III) from an aqueous chromium (III)-bearing solution comprising:

(a) contacting said solution with an organic extraction solvent comprising a mixture of mono-2-ethylhexyl phosphoric acid and di-2-ethylhexyl phosphoric acid as extractant whereby chromium (III) is extracted from the aqueous solution into the organic phase; and

(b) subsequently separating the resultant chromium (III) loaded organic phase from the aqueous phase.

4,436,706

PROCESS FOR THE RECOVERY OF PENTAVALENT VANADIUM COMPOUNDS FROM ACID CATALYST EXTRACTS

Lambertus J. G. Nacken, and Albertus H. Baas, both of Arnhem, Netherlands, assignors to Shell Internationale Research Maatschappij B. V., The Hague, Netherlands

Filed Aug. 6, 1982, Ser. No. 406,116

Claims priority, application Netherlands, Aug. 26, 1981, 8103964

Int. Cl.³ C01G *31/02*

U.S. Cl. 423—65 **15 Claims**

1. A process for the preparation of pentavalent vanadium compounds by reprocessing acid extracts of vanadium-containing catalysts spent in the hydrotreatment of crude or residual oils, characterized in that extracts containing trivalent and tetravalent vanadium are oxidized at a pH between 0.5 and 2.6 with an oxygen-containing gas to form concentrates of tetravalent vanadium, after which oxidation is carried out at a pH between 2.6 and 4.0 with an oxygen-containing gas to form concentrates of pentavalent vanadium.

4,436,707

METHOD FOR THE REMOVAL OF ACIDIC GASES SUCH AS CARBON DIOXIDE FROM GASEOUS MIXTURES

Heinz Karwat, Pullach, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 322,417, Nov. 18, 1981, abandoned. This application Jun. 30, 1983, Ser. No. 510,155

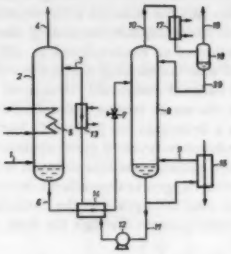
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1980, 3043831

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—226 **6 Claims**

1. A method for the removal of acidic gases comprising H_2S or CO_2 from gaseous mixtures which comprises washing said gaseous mixtures with a wash stream comprising methanol containing ammonia in an amount greater than 0.5 weight percent sufficient to prevent the formation of a solid precipitate of ammonia therein, and so as to remove at least a portion of said acidic gases from said gaseous mixture and to produce a laden methanol stream containing said acidic gases therein, regenerating said laden methanol stream by removing a suffi-

cient portion of said acidic gases therefrom, so as to regenerate said wash stream containing greater than about 0.65 weight



percent CO_2 therefrom, and recycling said regenerated wash stream.

4,436,708

PRODUCTION OF SYNTHETIC ZEOLITES

Robert N. Sanders, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Sep. 7, 1982, Ser. No. 415,428

The portion of the term of this patent subsequent to Aug. 23, 2000, has been disclaimed.

Int. Cl.³ C01B *33/28*

U.S. Cl. 423—329 **16 Claims**

1. A method of producing a crystalline synthetic faujasite of the zeolite "Y" type, comprising the steps of separately preparing a sodium silicate solution and a sodium aluminate solution, providing an activated system comprising a sodium silicate solution mixed with agitation for a period of at least about one-half hour with a seed amount of finely ground synthetic faujasite of the zeolite "Y" type at a temperature up to about 0° C., mixing the sodium aluminate solution with the activated system over a period of up to about five hours to provide a mixture having the following molar ratio:

$$(4.4\text{–}8.5)Na_2O.Al_2O_3.(10.1\text{–}16.0)SiO_2.(145\text{–}200)\text{-}H_2O,$$

allowing the mixture to stand for up to about 24 hours at a temperature from about 0° C. to ambient, heating the mixture to a temperature of about 90° C.–105° C. and reacting at said temperature until the desired crystalline synthetic faujasite of the zeolite "Y" type is formed, and recovering said zeolite "Y".

4,436,709

LASER PRODUCTION OF CARBON-13 BASED ON CF_2HCL

Michel Gauthier, Aylmer; Peter A. Hackett, and Clive Willis, both of Ottawa, all of Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Feb. 22, 1982, Ser. No. 350,741

Claims priority, application Canada, May 26, 1981, 378279

Int. Cl.³ B01D *59/00*

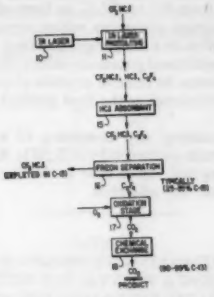
U.S. Cl. 423—437 **3 Claims**

1. A method of producing carbon-13 by multiphoton decomposition of CF_2HCl, said material containing carbon-12 and carbon-13 isotopic species, comprising:

(a) irradiating gaseous CF_2HCl in a reaction chamber at a pressure in the range 10–100 Torr with an infra-red laser beam at a frequency in the range 1040–1080 wavenumbers to selectively decompose the CF_2HCl to give C_2F_4 enriched to a first level of carbon-13, CF_2HCl, and HCl,

(b) passing these products through an absorber to remove the HCl and a separation stage to remove the CF_2HCl depleted in carbon-13,

(c) oxidizing the C_2F_4 to form CO_2, and



(d) passing the CO_2 through a second exchange stage to separate the $^{13}CO_2$ and the $^{12}CO_2$ and give a CO_2 product containing approximately 90–99% carbon-13.

4,436,710

METHOD OF MANUFACTURING POTASSIUM SULFATE

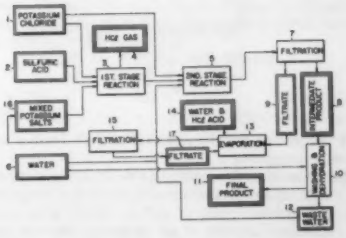
Naomi Miyazaki, Tokyo, and Akira Fujimura, Yono, both of Japan, assignors to Onoda Chemical Industry Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1982, Ser. No. 405,726

Claims priority, application Japan, Mar. 19, 1982, 57-44168

Int. Cl.³ C01B *7/01*; C01D *5/02*

U.S. Cl. 423—552 **4 Claims**



1. A method of manufacturing potassium sulfate which comprises:

the first dry step consisting of heating raw materials prepared by mixing concentrated sulfuric acid and recycled mixed cake from the third step, said cake consisting essentially of K_2SO_4, $KHSO_4$ and KCl, with at most addition of only a minor portion of non-recycled KCl, wherein the SO_4 contained in the mixed raw materials has a molar ratio to K contained therein ranging from 1.0:1.3 to 1.0:1.4, at a temperature of from 290° to 350° C. to form mixed salts of $KHSO_4$ and K_2SO_4 in a molten slurry state, the amount of H_2SO_4, K_2SO_4, $KHSO_4$ and KCl being sufficient to produce said mixed salts which have the composition $K_nH_{2-n}SO_4$ wherein $n=1.3\text{–}1.4$; and recovering the major portion of the total chloride values added in the overall process as hydrogen chloride gas which is evolved;

the second wet step consisting of dissolving said (i) mixed salts and (ii) additional non-recycled KCl, into water, the amount of said additional non-recycled KCl being 1.0 to 1.5 times the chemically equivalent amount which is sufficient to change the $KHSO_4$ in said mixed salts into potas-

sium sulfate, and the amount of said water being such that the aqueous solution of hydrochloric acid produced by the reaction of said second step has a concentration ranging from 6 to 9%; heating the solution to a reaction temperature of from 60° to 90° C. to form additional K_2SO_4 and to precipitate potassium sulfate crystals; cooling the reacted solution to a temperature of from 50° to 20° C. to precipitate additional potassium sulfate crystals; and filtering said solution to remove crystals of potassium sulfate which are recovered as the final product and to obtain a filtrate; and

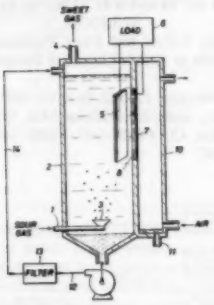
the third circulating step consisting of evaporating said filtrate to obtain a mixed cake of K_2SO_4, $KHSO_4$ and KCl; and recycling said mixed cake to the first step to be used as part of said raw materials.

4,436,711

METHOD OF REMOVING HYDROGEN SULFIDE FROM GASES UTILIZING A POLYVALENT METAL CHELATE SOLUTION AND REGENERATING THE SOLUTION IN A FUEL CELL

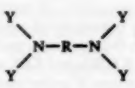
Donald C. Olson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 30, 1982, Ser. No. 430,467
Int. Cl.³ C01B *17/04*; B01D *53/34*
U.S. Cl. 423—573 G **6 Claims**



1. A process for the removal of H_2S from a sour gaseous stream comprising

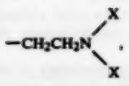
(a) contacting the sour gaseous stream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the solution containing an effective amount of an oxidizing reactant comprising a oxidizing polyvalent metal chelate of an acid having the formula



wherein

from two to four of the groups Y are selected from acetic and propionic acid groups;

from zero to two of the groups Y are selected from 2-hydroxyethyl, 2-hydroxy propyl, and



wherein X is selected from acetic acid and propionic acid groups; and

R is ethylene, propylene or isopropylene or alternatively cyclohexane or benzene where the two hydrogen atoms replaced by nitrogen atoms are in the 1,2 position, and mixtures thereof; and producing a sweet gas stream and an aqueous reaction solution containing crystalline sulfur, hydrogen ions and the reduced polyvalent metal chelate or chelates of said acid, said contacting zone comprising an anode section of an electrochemical cell, said electrochemical cell also comprising a separate cathode section containing a cathode connected through an external load to the anode, the anode section and cathode section being separated by a hydrogen ion permeable barrier;

(b) oxidizing reduced polyvalent metal chelate or chelates of said acid in the aqueous reaction solution, while concomitantly supplying oxygen to the cathode section and allowing hydrogen ions to migrate to the cathode section and producing direct current through the load, and water at the cathode;

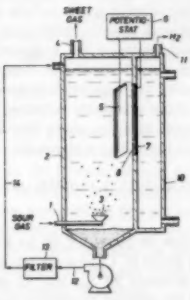
(c) removing sulfur from the aqueous reaction solution, and water from cathode section.

4,436,712

METHOD OF REMOVING HYDROGEN SULFIDE FROM GASES UTILIZING A POLYVALENT METAL CHELATE OF NITRILOTRIACETIC ACID AND ELECTROLYTICALLY REGENERATING THE SOLUTION

Donald C. Olson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 30, 1982, Ser. No. 429,958
Int. Cl.³ C01B *17/04*; B01D *53/34*
U.S. Cl. 423—573 G **6 Claims**



1. A process for the removal of H_2S from a sour gaseous stream comprising

(a) contacting the sour gaseous stream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the solution containing an effective amount of an oxidizing polyvalent metal chelate of nitrilotriacetic acid, and mixtures thereof, and producing a sweet gas stream and an aqueous admixture containing crystalline sulfur, hydrogen ions, and reduced polyvalent metal chelate or chelates of nitrilotriacetic acid; said contacting zone comprising an anode section of an electrochemical cell, said cell also comprising a separate cathode section containing a cathode connected through an external electrical connection to the anode, the anode section and the cathode section being separated by a hydrogen ion permeable barrier;

(b) oxidizing the reduced polyvalent metal chelate or chelates of nitrilotriacetic acid in the aqueous reaction solution at the anode by supplying direct current to said cell, concomitantly allowing hydrogen ions to migrate to the cathode and producing hydrogen at the cathode;

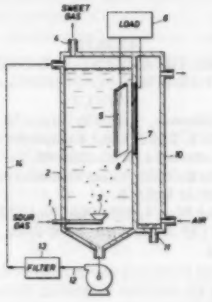
(c) removing sulfur from the aqueous reaction solution, and hydrogen from the cathode section.

4,436,713

METHOD OF REMOVING HYDROGEN SULFIDE FROM GASES UTILIZING A POLYVALENT METAL CHELATE OF NITRILOTRIACETIC ACID AND REGENERATING THE SOLUTION IN A FUEL CELL

Donald C. Olson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 30, 1982, Ser. No. 430,466
Int. Cl.³ C01B 17/04; B01D 53/34
U.S. Cl. 423—573 G 6 Claims



1. A process for the removal of H_2S from a sour gaseous stream comprising

(a) contacting the sour gaseous stream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the solution containing an effective amount of an oxidizing polyvalent metal chelate of nitrilotriacetic acid, and mixtures thereof, and producing a sweet gas stream and an aqueous admixture containing crystalline sulfur, hydrogen ions and reduced polyvalent metal chelate or chelates of nitrilotriacetic acid; said contacting zone comprising an anode section of an electrochemical cell, said electrochemical cell also comprising a separate cathode section containing a cathode connected through an external load to the anode, the anode section and cathode section being separated by a hydrogen ion permeable barrier;

(b) oxidizing reduced polyvalent metal chelate or chelates of nitrilotriacetic acid at the anode in the aqueous reaction solution while concomitantly supplying oxygen to the cathode section and allowing hydrogen ions to migrate to the cathode section, and producing direct current through the load and water at the cathode;

(c) removing sulfur from the aqueous reaction solution, and water from the cathode section.

4,436,714

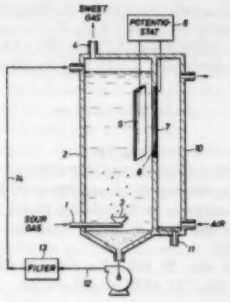
METHOD OF REMOVING HYDROGEN SULFIDE FROM GASES UTILIZING A POLYVALENT METAL CHELATE OF NITRILOTRIACETIC ACID AND ELECTROLYTICALLY REGENERATING THE SOLUTION

Donald C. Olson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 30, 1982, Ser. No. 430,532
Int. Cl.³ C01B 17/04; B01D 53/34
U.S. Cl. 423—573 G 6 Claims

1. A process for the removal of H_2S from a sour gaseous stream comprising

(a) contacting the sour gaseous gream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the solution containing an effective amount of an oxidizing polyvalent metal chelate of nitrilotriacetic acid, and mixtures thereof, and producing a sweet gas stream and an aqueous admixture containing crystalline sulfur, hydrogen ions, and reduced polyvalent metal chelate or chelates of nitrilotriacetic acid; said contacting zone comprising an anode section of an electrochemical cell, said cell also comprising a separate cathode section containing a cathode connected through an external electrical connection to the anode, the anode section and the cathode section being separated by a hydrogen permeable barrier;



(b) oxidizing the reduced polyvalent metal chelate or chelates of nitrilotriacetic acid in the aqueous reaction solution at the anode by supplying direct current to said cell and allowing hydrogen ions to migrate to the cathode, concomitantly supplying oxygen to the cathode and forming water at the cathode;

(c) removing sulfur from the aqueous reaction solution, and water from the cathode section.

4,436,715

STORAGE AND RETRIEVAL OF SINGLET OXYGEN

A. Paul Schaap, Detroit; George E. Busch, Milan, and Robert L. Nolen, Jr., Ann Arbor, all of Mich., assignors to KMS Fusion, Inc., Ann Arbor, Mich.

Filed Sep. 14, 1981, Ser. No. 302,033
Int. Cl.³ C01B 13/00
U.S. Cl. 423—579 16 Claims

1. A solid phase generator for releasing singlet oxygen in gas phase which comprises an endoperoxide molecular dispersion on a solid phase substrate of material selected from the group consisting of polymers, ceramics, silica glasses and metals, said endoperoxide having fused rings with a first of said rings being aromatic and a second of said rings being in aliphatic ring adjacently fused to said first ring with an oxygen-oxygen group bridging across non-adjacent carbons of said second ring, said dispersion on said substrate having a plurality of passages for diffusion of gas phase singlet oxygen from an interior portion of said dispersion to the surface thereof.

4,436,716

PROCESS FOR THE PRODUCTION OF SULPHUR WITH INCREASED ENERGY RECOVERY FROM A GAS CONTAINING H_2S, SO_2, H_2 AND/OR CO

Georges Kvasnikoff, Monein, and Robert Voirin, Mourenx, both of France, assignors to Societe Nationale Elf Aquitaine (Production), Paris, France

Filed Nov. 12, 1981, Ser. No. 320,846
Claims priority, application France, Nov. 17, 1980, 80 24324
Int. Cl.³ C01B 17/04
U.S. Cl. 423—574 R 26 Claims

1. In a process for the production of sulfur, with increased energy recovery, from a gas containing H_2S and SO_2, and at least one compound selected from H_2 and CO, wherein the gas passes through a CLAUS catalyst in a primary catalytic stage operating at a temperature between 200° C. and 460° C. to form sulphur by reaction of SO_2 with H_2S, and the reaction

mixture from the primary stage is cooled by indirect heat exchange with water to condense sulfur contained in the mixture and produce steam, the improvement which comprises:

passing the gas containing H_2 and CO through a CLAUS reaction catayst in the primary catalytic stage wherein at least the final one eighth of the catalyst volume comprises a composite catalyst which comprises a refractory oxide CLAUS reaction catalyst having fixed thereon from 0.3 to 20 percent by weight, of the composite catalyst, of at least one transition metal compound of metals selected from the group consisting of Groups I, II, V, VI and VIII of the PERIODIC CLASSIFICATION OF ELEMENTS at a temperature above 300° C., to achieve H_2 and CO oxidation.

4,436,717

^{18}F-4-FLUOROANTIPYRINE

Chyng-Yann Shiue, Wading River, and Alfred P. Wolf, Setauket, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 29, 1981, Ser. No. 268,422

Int. Cl.^{3} A61K *43/00, 49/00*

U.S. Cl. 424—1.1 **3 Claims**

1. A method for preparing the novel radioactive compound ^{18}F-4-fluoroantipyrine which comprises treating antipyrine in glacial acetic acid with radioactive fluorine in a carrier of molecular fluorine, at room temperature, and purifying said compound by means of gel chromatography with ethyl acetate as eluent.

4,436,718

IODINATING REAGENT

Paul K. Smith, Roscoe, Ill., assignor to Pierce Chemical Company, Rockford, Ill.

Filed Oct. 13, 1981, Ser. No. 311,077

Int. Cl.^{3} A61K *43/00, 49/00*

U.S. Cl. 424—1.1 **13 Claims**

1. An oxidant useful in achieving transformations in a biological specimen comprising a water insoluble bead having covalently attached to its surface molecules containing a chloramine group, with the size and shape of said bead being compatible with easy physical separation of the oxidant from a solution of said biological specimen.

4,436,719

MICROENCAPSULATED INSECTICIDAL PERSISTENCY THROUGH THE USE OF GELATIN

Harold L. Lindaberry, Ambler, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation of Ser. No. 241,091, Mar. 6, 1981, abandoned. This application Jun. 24, 1982, Ser. No. 391,650

Int. Cl.^{3} A61K *9/50*

U.S. Cl. 424—37 **1 Claim**

1. A method for improving the persistent adherence of microcapsules of insecticide to foliage of a crop to protect said foliage from insect attack comprising:

providing an insecticide, said insecticide being microencapsulated in microcapsules comprising polyamide-polyurea subunits;

suspending said microencapsulated insecticide in an aqueous spray medium;

admixing with said aqueous medium from about 0.05% to about 1.0% by volume of said medium of type B gelatin, having an average molecular weight of from about 15,000 to about 30,000 and a viscosity of from 10 to about 30 poises; and

applying said admixture to said foliage by spraying means at a rate of from about 0.25 to about 2.0 lbs. of microencapsulated insecticide per acre of plants to improve said protection from insect attack for an improved period of time, said type B gelatin decreasing the permeactivity of the encapsulated insecticide through the capsule walls, which are coated, at least in part, and, in this way, the rate of release of the insecticide to the environment decreased, and the persistency of the insecticide concomitantly increased.

4,436,720

GRANULATED TREATMENT-AND-PROPHYLACTIC DENTAL PREPARATION POSSESSING ANTICARIOUS EFFECT

Gennady N. Pakhomov, Leninsky prospekt 123/1, kv. 529, Moscow; Anita Y. Luste, ulitsa Lachplesha 27, kv. 22; Galina I. Kadnikova, ulitsa Ya. Rudzutaka 60, kv. 10, both of Riga, and Anatoly G. Kolesnik, ulitsa Shosseinaya 58 korpus 2, kv. 59, Moscow, all of U.S.S.R.

Filed Mar. 4, 1983, Ser. No. 472,166

Int. Cl.^{3} A61K *7/16, 7/18, 7/26, 9/46*

U.S. Cl. 424—44 **3 Claims**

1. A granulated treatment-and-prophylactic dental preparation comprising an abrasive substance, tartaric acid, sodium bicarbonate, a foaming agent, a flavouring agent, a binder and an anticarious substance comprising a product obtained by treatment of a bone tissue with dilute mineral acid to complete dissolution of mineral components and water-soluble proteins contained in the bone tissue, separation of the resulting solution, dilution thereof with water with the addition of a stabilizing agent-citric acid or salts thereof, followed by neutralization of the solution and drying, and containing the following components, percent by weight:

calcium—2–6,
sodium—19–23,
potassium—0.04–0.18,
mineral acid anion—6–10.6,
orthophosphoric acid anion—1.5–5.0,
water-soluble proteins—1.0–5.0,
magnesium—0.05–0.2,
mixture of trace elements including fluorine, tin, manganese, zinc, iron—0.01–0.02
complex citrate compounds as calculated for citric acid anion—the balance,

and having the following proportions of the starting components, percent by weight:

tartaric acid—11–15,
foaming agent—1.8–2.27,
sodium bicarbonate—42–46,
binder—0.11–0.13,
flavouring agent—0.8–1.2,
anti-caries substance—1–6,
abrasive substance—the blance.

4,436,721

ORAL COMPOSITION HAVING MOLE RATIO OF TETRA (METHYLENE PHOSPHONATE) TO ALKALI METAL FLUORIDE OF AT LEAST 1.4:1

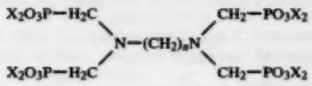
Abdul Gaffar, Somerset, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jun. 8, 1983, Ser. No. 502,078

Int. Cl.^{3} A61K *7/16, 7/18, 7/22*

U.S. Cl. 424—52 **8 Claims**

1. An oral composition comprising an oral vehicle, at least about 0.275% by weight of a diamine tetra (methylene phosphonate) having the formula:



wherein n is a number from 1 to 10 and X is selected from the group consisting of hydrogen and an orally acceptable cation, at least one X group being an orally acceptable cation, and alkali metal fluoride, in amount which provides about 0.01–1% by weight of fluoride ion, the mole ratio of the tetra (methylene phosphonate) portion, $(CH_2\text{-}PO_3^{-2})4$, of said diamine tetra (methylene phosphonate) to fluoride ion being at least about 1.4:1.

4,436,722

HAIR RINSE COMPOSITION

Kinjiro Matsunaga, Miyashiro; Takeo Okumura, Sakura; Sachio Naito, Tokyo, and Rikio Tsushima, Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1981, Ser. No. 316,490

Claims priority, application Japan, Nov. 17, 1980, 55-161599

Int. Cl.³ A61K *7/08*

U.S. Cl. 424—70 **7 Claims**

1. A hair rinse composition comprising 0.01 to 10 wt.% at least one cationic surface active agent and 0.01 to 10 wt.% a decomposition derivative of a keratin material selected from the group consisting of (1) alkali salts of decomposition products obtained by oxidation of keratin material, (2) alkali salts of derivatives at a thiol group of decomposition products obtained by reduction of keratin material, and a mixture thereof, these components having been dispersed or dissolved in a solvent.

4,436,723

ARTHRITIS COMPOSITION OF MATTER, AND METHODS OF PREPARING AND UTILIZING SAME

Juanita Nepon, 21640 Twelve Mile Rd., St. Clair Shores, Mich. 48081

Filed Sep. 24, 1980, Ser. No. 190,457

Int. Cl.³ A61K *35/12, 35/28, 35/407*

U.S. Cl. 424—95 **3 Claims**

1. A composition for use in treating arthritis comprising:

dried edible natural bone meal;

said bone meal comprising red bone marrow; and natural desiccated beef liver;

said bone meal and said desiccated liver being mixed with water;

the relative proportion of edible bone meal to liver being approximately eight parts bone meal to five parts liver.

4,436,724

METHOD OF PRODUCING γ-GLOBULIN FOR INTRAVENOUS INJECTION AND THERAPEUTIC AGENT PRODUCED THEREBY

Haruo Ohnishi, Chiba; Hiroshi Kosuzume, Kanagawa; Yasuo Suzuki, Saitama, and Ei Mochida, Tokyo, all of Japan, assignors to Mochida Pharmaceutical Co., Ltd., Tokyo, Japan

Filed May 26, 1982, Ser. No. 382,233

Claims priority, application Japan, May 29, 1981, 56-82903

Int. Cl.³ C07G *7/00*

U.S. Cl. 424—101 **35 Claims**

1. A method of producing γ-globulin for intravenous injection, which comprises treating γ-globulin with an enzyme, selected from pepsin and uropepsin, in a pH range of 6.0 to 7.5.

35. A therapeutic agent for intravenous injection comprising γ-globulin treated with an enzyme, said enzyme being selected from pepsin and uropepsin, in a pH range of 6.0 to 7.5.

4,436,725

PHYSIOLOGICALLY ACTIVE NOVEL SUBSTANCE MUTASTEIN AND PROCESS FOR ITS PRODUCTION

Akira Endo, Tokyo, Japan, assignor to Godo Shusei Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1982, Ser. No. 352,069

Claims priority, application Japan, Mar. 6, 1981, 56-31985

Int. Cl.³ A61K *35/00, 7/16;* C12D *1/02*

U.S. Cl. 424—116 **8 Claims**

1. A physiologically active substance identified as Mutastein having the following physiochemical properties:

(1) a molecular weight of at least 200,000, and said Mutastein, when being subjected to gel-filtration over Sephadex G-100 or Sephallose 6B, is eluted in the void volume;

(2) the ultraviolet spectrum of FIG. 1;

(3) the infrared spectrum of FIG. 2;

(4) said Mutastein having a proteinaceous nature and containing about 10% of a saccharide;

(5) said Mutastein being soluble in water and a saline solution, but being salted out from a saturated solution containing about 30% of ammonium sulfate; said Mutastein being insoluble in acetone, ethanol, ethylacetate and benzene;

(6) said Mutastein being dissolvable in a buffer solution having a pH of at least 7, but precipitating from solution at a pH of from 3 to 3.5;

(7) said Mutastein being stable when heat-treated at pH 9 at 100° C. for 10 minutes;

(8) an elemental analysis of: C: about 44%, H: about 7% and N: about 12%,

(9) color reactions yielding an orange color to the Phenol-sulfuric acid color reaction and blue to the Folin's color reaction.

4,436,726

N-ACYLPEPTIDE COMPOUND, PROCESSES FOR THE PREPARATION THEREOF AND THE PHARMACEUTICAL COMPOSITIONS

Kazuyoshi Umehara, Ashiya; Hirokazu Tanaka, Takarazuka; Itsuo Uchida, Kyoto; Masanobu Kohsaka, Sakai, and Hiroshi Imanaka, Mishima, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

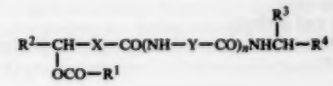
Filed Dec. 9, 1981, Ser. No. 329,075

Claims priority, application United Kingdom, Dec. 15, 1980, 8040130

Int. Cl.³ C07C *103/52;* A61K *37/02;* C07C *67/02*

U.S. Cl. 424—177 **6 Claims**

1. A compound of the formula:



wherein

R^1 and R^2 are each alkyl or alkenyl;

R^3 is hydrogen, lower alkyl, hydroxy(lower)alkyl, heterocyclic(lower)alkyl or ar(lower)alkyl, wherein the aryl moiety may have hydroxy or protected hydroxy;

R^4 is carboxy, esterified carboxy, carboxy(lower)alkyl or esterified carboxy(lower)alkyl;

X is bond or lower alkylene;

Y is lower alkylene or lower alkylidene; and

n is an integer of 0 or 1; or its pharmaceutically acceptable salt.

4,436,727

REFINED DETOXIFIED ENDOTOXIN PRODUCT

Edgar E. Ribi, Hamilton, Mont., assignor to Ribi ImmunoChem Research, Inc., Hamilton, Mont.

Filed May 26, 1982, Ser. No. 382,404
Int. Cl.³ A61K 37/00; A01N 65/00; C07G 7/00
U.S. Cl. 424—177 **16 Claims**

1. A method of producing refined detoxified endotoxin having no detectable 2-keto-3-deoxyoctanoate, between about 350 and 475 nmoles/mg of phosphorus, and between about 1700 and 2000 nmoles/mg of fatty acids which comprises:

(a) hydrolyzing an endotoxin extract derived from Enterobacteriaciae with an acid capable of hydrolyzing the same;

(b) lyophilizing the hydrolyzed product to obtain crude lipid A;

(c) treating crude lipid A with a first solvent capable of dissolving fatty acids contained therein to remove said fatty acids from a resulting insoluble product

(d) dissolving the resulting insoluble product in a second solvent capable of dissolving the same; and

(e) passing the resulting solution through a chromatographic column of a type which will allow elution of the desired product to obtain the refined detoxified endotoxin.

4,436,728

REFINED DETOXIFIED ENDOTOXIN PRODUCT

Edgar E. Ribi, Hamilton; Steven M. Schwartzman, Stevensville, and John L. Cantrell, Hamilton, all of Mont., assignors to Ribi ImmunoChem Research, Inc., Hamilton, Mont.

Filed May 26, 1982, Ser. No. 382,405
Int. Cl.³ A61K 37/00; A01N 65/00; C07G 7/00
U.S. Cl. 424—177 **11 Claims**

1. A therapeutic composition for imparting immunotherapy comprising an effective amount of each of

(a) refined detoxified endotoxin having no detectable 2-keto-3-deoxyoctanoate and having between 350 and 475 nmoles/mg of phosphorus and between about 1700 and 2000 nmoles/mg of fatty acids prepared by the method which comprises:

(i) hydrolyzing an endotoxin extract derived from Enterobacteriaciae with an acid capable of hydrolyzing the same;

(ii) lyophilizing the hydrolyzed product to obtain crude lipid A;

(iii) treating crude lipid A with a first solvent capable of dissolving fatty acids contained therein to remove said fatty acids from a resulting insoluble product

(iv) dissolving the resulting insoluble product in a second solvent capable of dissolving the same; and

(v) passing the resulting solution through a chromatographic column of a type which will allow elution of the desired product to obtain the refined detoxified endotoxin;

(b) cell wall skeleton;

(c) trehalose dimycolate; and a pharmaceutically acceptable carrier.

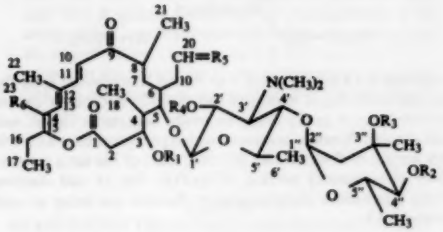
4,436,729

23-DEMYCINOSYLTYLOSIN COMPOUNDS, PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE

Ashit K. Ganguly, Upper Montclair; Yi-Tsung Liu, Parsippany, and Alan K. Mallams, West Orange, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Jun. 30, 1982, Ser. No. 393,901
Int. Cl.³ A61K 31/71; C07H 17/08
U.S. Cl. 424—180 **47 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen or an acyl group selected from alkanoyl of 2 to 5 carbon atoms, palmityl, stearyl, lauryl, oleyl, chloroacetyl, benzoyl, adamantanecarbonyl, cyclopropanecarbonyl, cyclohexanecarbonyl, β-cyclohexylpropionyl, phenylacetyl, phenoxyacetyl, mandelyl, 2-thienylacetyl, alkyl-, aryl- and aralkylsulfonyl, substituted aryl- and aralkylsulfonyl, wherein the substituents on the aryl portions are halogen, nitro and alkoxy groups, succinyl, maleyl, fumaryl, malonyl and phthalyl;

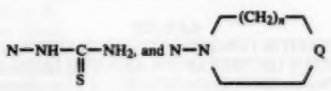
R_2 is acyl, wherein acyl is as defined in R_1;

R_3 is hydrogen or acyl, wherein acyl is as defined in R_1; or R_2 and R_3 are together a carbonyl group linking the 3"- and 4"-hydroxyl groups;

R_4 is hydrogen or acyl, wherein acyl is as defined in R_1;

R_5 is selected from the group consisting of

N-NH-aralkyl,

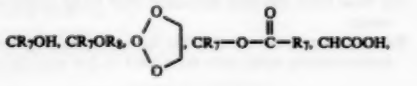


wherein

n is 0–2, and

Q is selected from the group consisting of

CH_2, CHR_7, CHR_8, CR_7R_8, NR_6, O, S, SO_2, CHOH, $CHOR_7$,



CR_7OH, CR_7OR_8, , $CR_7-O-\overset{O}{\overset{\|}{C}}-R_7$, CHCOOH,

$CHCOOR_7$, $CHCONH_2$ and $CHCNR_7R_8$,

wherein R_7 and R_8 are independently selected from the group consisting of (C_1-C_6) alkyl, (C_7-C_{10}) aralkyl and (C_6-C_{10}) aryl including X-substituted aryl and aralkyl, wherein X is halogen, trifluoromethyl, (C_1-C_6) alkoxy, or (C_1-C_6) alkylcarbonyl; R_6 is methyl, hydroxymethyl, fluoromethyl, chloromethyl, bromomethyl, iodomethyl, di (C_1-C_6) alkylamino, acyloxymethyl, CHO or a group of the formula $CH=R_5$ wherein R_5 is as hereinbefore defined; and

the pharmaceutically acceptable salts thereof.

20. A method of eliciting an antibacterial response in a mammal having a gram positive bacterial infection which comprises administering to the mammal a therapeutically effective quantity of a compound according to claim 1.

4,436,730

IONIC OPTHALMIC CELLULOSE POLYMER SOLUTIONS

Edward J. Ellis, Georgetown, and Joseph C. Salamone, Marblehead, both of Mass., assignors to Polymer Technology Corporation, Wilmington, Mass.

Continuation of Ser. No. 51,961, Jun. 25, 1979, Pat. No. 4,321,261, which is a continuation-in-part of Ser. No. 38,703, May 14, 1979, abandoned, which is a continuation of Ser. No. 867,136, Jan. 5, 1978, Pat. No. 4,168,112. This application Nov. 9, 1981, Ser. No. 319,111

The portion of the term of this patent subsequent to Mar. 23, 1999, has been disclaimed.

Int. Cl.³ A61K *31/73*

U.S. Cl. 424—180 3 Claims

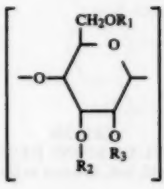
1. A lens solution for treating contact lens surfaces to form a protective coating thereof,

said lens solution consisting essentially of a cationic cellulose polymer in solution with said polymer being present in an amount of from 0.001 to 10% by weight of said solution,

said solution being useful to form protective coatings on lens surfaces formed of oppositely charged material by producing a thin coating of a hydrogel when contacted with said contact lens surface,

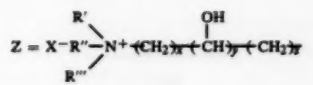
said lens solution having a pH in the range of from 6 to 8,

said polymer having the following formula:



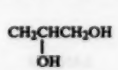
where R_1, R_2 and R_3 are selected from the group consisting essentially of H, derivatives of C_1–C_{20} carboxylic acid, C_1–C_{20} alkyl groups, C_1 to C_3 monohydric and dihydric alkanols, hydroxyethyl groups, hydroxypropyl groups, ethylene oxide groups, propylene oxide groups, phenyl groups, "Z" groups and combinations thereof, Z being selected from cationic groups, said cationic groups being selected from groups as follows:

A. groups containing nitrogen



where:

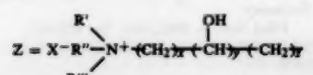
R′, R″ and R‴ can be H, CH_3, C_2H_5, CH_2CH_2OH, or



x=0–5, y=0–4, and z=0–5

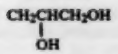
X^-=Cl^-, Br^-, I^-, HSO_4^-, $CH_3SO_4^-$, $H_2PO_4^-$, NO_3^-

B. Groups containing phosphorous



where:

R′, R″ and R‴ can be H, CH_3, C_2H_5, CH_2CH_2OH, or



x=0–5, y=0–4 and z=0–5

X^-=Cl^-, Br^-, I^-, HSO_4^-, $CH_3SO_4^-$, $H_2PO_4^-$, NO_3^-.

4,436,731

SEMI-SYNTHETIC CHITIN DERIVATIVE, THE PROCESS FOR ITS PREPARATION, AND THERAPEUTIC COMPOSITIONS WHICH CONTAIN IT AS ACTIVE PRINCIPLE

Javier E. Maltz, Buenos Aires, Argentina, assignor to Etablissement Texcontor, Vaduz, Liechtenstein

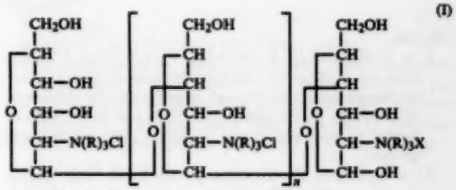
Filed Mar. 31, 1982, Ser. No. 363,825

Claims priority, application Italy, Apr. 6, 1981, 20953 A/81

Int. Cl.³ A61K *31/73*; C08B *37/08*

U.S. Cl. 424—18.0 5 Claims

1. A polysaccharide of formula:



(I)

in which R is alkyl of 1–6 carbon atoms, n is a whole number between 1000 and 2000, X=Cl, $CH_3OSO_3^-$, SO_4^{--}.

5. A therapeutic composition comprising a hypocholesterolemically effective amount of a compound as defined in claim 1 and a pharmaceutically acceptable carrier.

4,436,732

MEDICATED COMPOUND FOR TREATING DISEASES INFECTED BY VIRUS OF THE HERPES GROUP

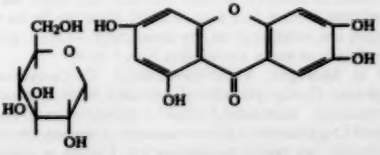
Serafima A. Vichkanova, ulitsa Moskovskaya, 1, kv. 192, Ljubertsy, Moskovskaya oblast; Ljudmila D. Shipulina, 28, kv. 240, poselok Razvilka, Moskovskaya oblast; Vladimir I. Glyzin, ulitsa Shipilovskaya, 29, korpus 2 kv. 255, Moscow; Alexandr I. Bankovsky, ulitsa Institutskaya, 4, kv. 6, p/o "Vilar", Moskovskaya oblast; Mikhail G. Pimenov, Vtoraya Kvesiskaya, 24, korpus 2, kv. 8, Moscow, and Klim I. Boryaev, ploschad Lenina, 5a, kv. 33, Chimkent, all of U.S.S.R.

Filed Oct. 26, 1981, Ser. No. 315,016

Int. Cl.³ A61k *31/70*; C13K *11/00*

U.S. Cl. 424—180 3 Claims

1. A method of treating a herpes viral infection which comprises administering to a patient suffering from said infection a pharmaceutical composition containing as an active ingredient 2-*C*-*β*-D-glucopyranosyl-1,3,6,7-tetraoxyxanthone of the formula:



in an antiviral effective amount.

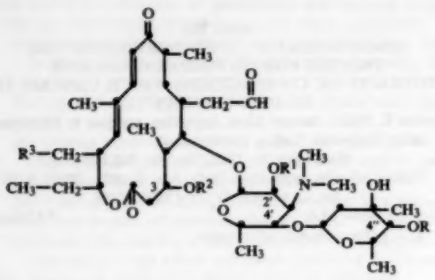
4,436,733

4"- AND 3-ESTER DERIVATIVES OF DMT AND DMOT

Herbert A. Kirst, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 3, 1982, Ser. No. 354,262
Int. Cl.³ A61K 31/71; C07H 17/08
U.S. Cl. 424—180 53 Claims

1. A compound of the formula



wherein

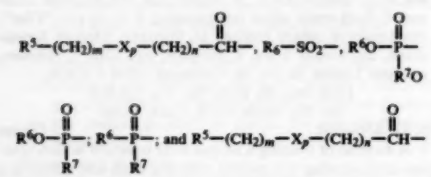
R is hydrogen, C_1–C_5-alkanoyl, C_1–C_5-alkanoyl having from one to three halo substituents, benzoyl, phenylacetyl, or phenoxyacetyl or benzoyl, phenylacetyl or phenoxyacetyl having on the phenyl ring from one to five halo or methyl or from one to two methoxyl, nitro, or hydroxyl groups;

R^1 is hydrogen, C_1–C_5-alkanoyl, C_1–C_5-alkanoyl having from one to three halo substituents, benzoyl, phenylacetyl, or phenylpropionyl or benzoyl, phenylacetyl, or phenylpropionyl having on the phenyl ring from one to five halo or methyl or from one to two methoxyl, nitro, or hydroxyl groups;

R^2 is hydrogen, C_1–C_5-alkanoyl, C_1–C_6-alkanoyl having from one to three halo substituents, benzoyl, phenylacetyl, phenylpropionyl, phenoxyacetyl, or phenylthioacetyl or benzoyl, phenylacetyl, phenylpropionyl, phenoxyacetyl or phenylthioacetyl having on the phenyl ring from one to five halo or methyl or from one to two methoxy, nitro, or hydroxyl groups;

R^3 is hydrogen or R^4O—; and

R^4 is hydrogen or an acyl group selected from:



substituted by one or two halo, ethyl, methoxy, amino, N-protected amino, methylamino, dimethylamino, nitro, acetoxy, acetamido, azido, carbomethoxy, carboxamido, cyano, or hydroxyl groups, provided that, when the substituent is other than halo or alkyl, there can be no more than one substituent on any connecting —CH_2— group;

p is 0 or 1; m and n are integers from 0 to 4;

R^5 is hydrogen, halo, C_1–C_4-alkyl, C_3–C_8-cycloalkyl, phenyl, C_5–C_8-cycloalkenyl, naphthyl, indenyl, tetralinyl, decalinyl, adamantyl,1-ethyl-1,4-dihydro-4-oxo[1,3]dioxolo[4,5-g]cinnolin-3-yl(cinnoxacinyl), a monocyclic heterocyclic ring system comprising 3 to 8 atoms or a bicyclic heterocyclic ring system comprising 6 to 11 atoms, provided that at least 1 atom of the ring system is carbon and at least 1 atom of the ring system is a heteroatom selected from O, N, and S;

X is O, S, —NH—, —$N(CH_3)$—, —C≡C—, —CH=CH—, —$C(CH_3)$=CH—, —CH=$C(CH_3)$— or —$C(CH_3)$=$C(CH_3)$—; and

R^6 and R^7 are C_1–C_5-alkyl or optionally substituted phenyl or benzyl;

and further provided that one of R or R^2 must be other than hydrogen and that, when R^1 is hydrogen, R^3 is hydrogen or —OH and R^2 is acetyl, R cannot be hydrogen, acetyl, n-butyryl or isovaleryl and, when R and R^1 are hydrogen and R^3 is hydrogen or OH, R^2 cannot be propionyl; and the acid addition salts thereof.

52. A method for controlling susceptible Mycoplasma infections which comprises administering to an infected or susceptible warm-blooded animal an effective amount of a compound of claim 1 or a pharmaceutically-acceptable acid addition salt thereof and a suitable pharmaceutical vehicle.

4,436,734

CONTROL OF SWINE DYSENTERY

Earl E. Ose, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 17, 1983, Ser. No. 458,381
Int. Cl.³ A61K 31/71
U.S. Cl. 424—181 9 Claims

1. A method for the treatment or prevention of swine dysentery which comprises administering to swine suffering from or exposed to swine dysentery an effective amount of avilamycin.

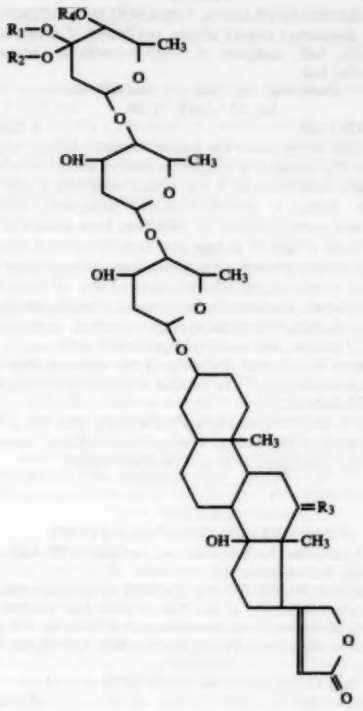
4,436,735

KETALS OF 3'''-DEHYDROCARDENOLIDE TRIDIGITOXOSIDES

Wolfgang Schaumann, Heidelberg; Fritz Kaiser, Lampertheim; Wolfgang Voigtländer, Weinheim; Edgar Hoyer, Mannheim, and Peter Neubert, Weinheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Nov. 5, 1982, Ser. No. 439,653
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1981, 3146899
Int. Cl.³ A61K 31/585; C07J 19/00
U.S. Cl. 424—182 20 Claims

1. A ketal of 3'''-dehydrocardenolide tridigitoxosides of the general formula:



(I)

in which R_1 and R_2 are identical alkyl radicals containing up to 3 carbon atoms or together represent a cyclic ketal containing 2 to 6 carbon atoms, R_3 represents two hydrogen atoms, the group

or the radical

wherein R_1 and R_2 have the above-given meaning, and R_4 is a hydrogen atom or a lower acyl or alkyl radical with up to 3 carbon atoms.

20. A method of treating a cardiac insufficiency in a patient which comprise administering to such patient a cardioactive effective amount of a compound according to claim **1.**

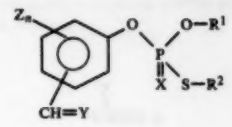
4,436,736

METHODS FOR CONTROLLING PESTS WITH SUBSTITUTED PHENYL THIO(THIONO)PHOSPHATES AND THE THIO(THIONO)PHOSPHATES

Leonard E. Hodakowski, and Charles A. Wilson, II, both of Raleigh, N.C., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 29, 1982, Ser. No. 363,251
Int. Cl.³ A01N *57/14*; C07F *9/165*
U.S. Cl. 424—211 **33 Claims**

1. A method of controlling insects and mites which comprises subjecting them to an insecticidally or miticidally effective amount of a compound of the formula:



wherein:

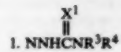
X is oxygen

R^1 and R^2 are individually lower alkyl groups;

Z is hydrogen, alkyl, alkoxy, halo, nitro, cyano, aryl, aryloxy, alkylthio, amino, alkylamino, dialkylamino, a C_3 to C_8 cycloalkyl, alkylthioalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, alkylaminoalkyl, dialkylaminoalkyl, trihaloalkyl, or divalent alkylene group of 3 to 5 carbon atoms;

n is 1, 2 or 3;

Y is



1. $NNHCNR^3R^4$

2. $NNHCCNR^3R^4$

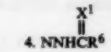
wherein:

R^3 and R^4 are individually hydrogen, lower alkyl, lower alkenyl, or aryl;

3. NOR^5

wherein:

R^5 is substituted or unsubstituted lower alkyl, aryl, or arylalkyl;



4. $NNHCR^6$

wherein:

R^6 is lower alkyl, alkoxy, aryloxy, substituted alkyl, cycloalkoxy, furanyl, or phenylureido;

5. $NNHCCH_2NR_3^9$

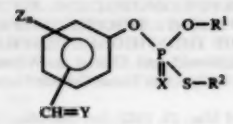
wherein:

R^9 is lower alkyl;

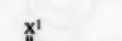
wherein:

X^1 is oxygen or sulfur.

12. Compounds of the formula:

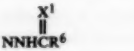


wherein:
X is oxygen or sulfur;
R^1 and R^2 are individually lower alkyl groups;
Z is hydrogen, alkyl, alkoxy, halo, nitro, cyano, aryl, aryloxy, alkylthio, amino, alkylamino, dialkylamino, a C_3 to C_8 cycloalkyl, alkylthioalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, alkylaminoalkyl, or divalent alkylene group of 3 to 5 carbon atoms;
n is 1, 2 or 3;
Y is



4. $NNHCR^6$

wherein:
R^3 and R^4 are individually hydrogen, lower alkyl, lower alkenyl, or aryl;
3. NOR^5
wherein:
R^5 is substituted or unsubstituted lower alkyl, aryl, or arylalkyl;



4. $NNHCR^6$

wherein:
R^6 is lower alkyl, alkoxy, aryloxy, substituted alkyl, cycloalkoxy, furanyl, or phenylureido;

5. $NNHCCH_2\overset{+}{N}R_3^9$

wherein:
R^9 is lower alkyl;
wherein
X^1 is oxygen or sulfur.

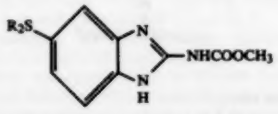
4,436,737

ANTHELMINTIC COMPOSITIONS

Joseph C. Boray, Neutral Bay, Australia, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 17, 1982, Ser. No. 358,986
Claims priority, application Switzerland, Mar. 18, 1981, 1841/81
Int. Cl.³ A61K *31/66, 31/415*
U.S. Cl. 424—225 **6 Claims**

1. An anthelmintic composition comprising an anthelmintically effective amount of a combination of (a) O-(4-bromo-2-chlorophenyl) O-ethyl S-propyl phosphorothioate and (b) at least one member selected from the group consisting of
(i) a compound of the formula:



wherein R_2 is propyl or phenyl; and
(ii) the acid addition salts thereof, wherein the weight ratio of (a) to (b) is from about 2:1 to about 4:1, in combination with a non-toxic carrier therefor.

4,436,738

STABILIZED ESTRADIOL CREAM COMPOSITION

Robert J. Bequette; Linda G. Hobbs, and Joseph A. Scott, all of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Mar. 15, 1982, Ser. No. 358,068
Int. Cl.³ A61K *31/56*
U.S. Cl. 424—238 **4 Claims**

1. A cream composition for topical estrogen therapy which comprises 17β-estradiol of a concentration of about 1% or less on a weight basis relative to the whole composition and the remainder being a pharmaceutically acceptable carrier wherein said carrier contains as stabilizers from about 0.01 to about 10% by weight of at least one member selected from
(a) one or more phenolic-type antioxidants selected from the group consisting of t-butylhydroquinone, di-t-amylhydroquinone, di-t-butylhydroquinone, butylhydroxytoluene, butylhydroxyanisole, pyrocatechol, pyrogallol, propyl gallate, and nordihydroguaiaretic acid;
(b) one or more metal chelating agents selected from the group consisting of the sodium edetates (EDTA), and edatic acid; and
(c) one or more suspending agents selected from the group consisting of carbomer, carboxymethylcellulose, hydroxypropyl methylcellulose and methylcellulose.

4,436,739

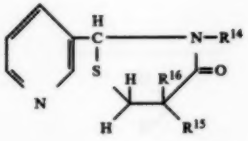
SUBSTITUTED 1-THIA-3-AZA-4-ONES

Eriks V. Krumkalns, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 188,189, Sep. 18, 1980, abandoned, which is a continuation-in-part of Ser. No. 110,868, Jan. 9, 1980, abandoned, which is a continuation-in-part of Ser. No. 951,708, Oct. 16, 1978, abandoned. This application Dec. 4, 1981, Ser. No. 327,311
Int. Cl.³ A01N *43/40, 43/86;* **C07D** *401/04*
U.S. Cl. 424—246 **5 Claims**

1. A method of protecting plants from phytopathogenic fungi which comprises contacting the fungi with a fungicidally-effective and non-herbicidal amount of a compound of the formula

(V)



wherein
R^{14} is C_3–C_6 alkyl, C_5–C_6 cycloalkyl, halobenzyl, halophenyl, trifluoromethylphenyl, tolyl, or methoxyphenyl;
R^{15} is hydrogen or methyl; and
R^{16} is hydrogen or methyl;
or an acid addition salt thereof.

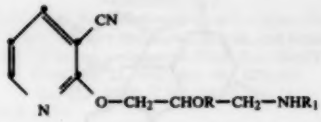
4,436,740

3-CYCLOALKYLAMINO-2-OR-PROPOXYCYANOPYRIDINES

John J. Baldwin, Gwynedd Valley, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 26, 1982, Ser. No. 401,454
Int. Cl.³ C07D *213/57;* **A61K** *31/44*
U.S. Cl. 424—263 **8 Claims**

1. Compounds having the formula:



and pharmaceutically acceptable salts thereof wherein:

R is H and

R_1 is C_5–C_8 cycloalkyl or substituted C_5–C_8 cycloalkyl wherein the substituent is mono- or diloweralkyl.

8. A method of treating hypertension in humans by administering to humans in need of such treatment, an effective amount of a compound of claim 1.

4,436,741

METHOD FOR ADMINISTERING SCOPOLAMINE TRANSDERMALLY

John Urquhart; Santosh K. Chandrasekaran, both of Palo Alto, and Jane E. Shaw, Atherton, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 253,961, Apr. 13, 1981, abandoned, which is a continuation of Ser. No. 777,130, Mar. 14, 1977, Pat. No. 4,262,003, which is a division of Ser. No. 721,602, Sep. 7, 1976, Pat. No. 4,031,894, which is a continuation-in-part of Ser. No. 638,947, Dec. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 547,504, Feb. 6, 1976, abandoned. This application Mar. 14, 1983, Ser. No. 474,754

The portion of the term of this patent subsequent to Apr. 14, 1998, has been disclaimed.

Int. Cl.³ A61K *31/445*

U.S. Cl. 424—267 11 Claims

1. A method for administering scopolamine transdermally for a prolonged time period comprising administering scopolamine base to a predetermined area of unbroken skin in a skin saturating initial dose of about 10 to about 200 $\mu g/cm^2$ of skin and thereafter at a substantially constant rate in the range of about 0.3 to about 15 $\mu g/hr$ which rate is sufficient to maintain the urinary excretion of scopolamine in the range of from 0.05 to about 1.5 $\mu g/hr$ for said prolonged period of time.

4,436,742

4-HYDROXY-2,1,3-BENZTHIADIAZOLE COMPOUNDS AND β-ADRENERGIC METHOD OF USE THEREFOR

Erich Fauland, Mannheim-Gartenstadt; Wolfgang Kampe, Heddesheim; Kurt Stach, Mannheim-Waldhof, and Wolfgang Bartsch, Viernheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

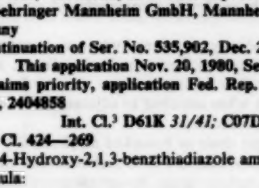
Continuation of Ser. No. 535,902, Dec. 23, 1974, abandoned. This application Nov. 20, 1980, Ser. No. 208,741

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1974, 2404858

Int. Cl.³ D61K *31/41*; C07D *285/06*

U.S. Cl. 424—269 10 Claims

1. 4-Hydroxy-2,1,3-benzthiadiazole amine compound of the formula:

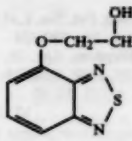


(I)

wherein

R is branched alkyl of 3 or 4 carbon atoms and the pharmacologically compatible salts thereof.

7. Method for treating cardiac or circulatory insufficiencies in mammals susceptible to treatments by beta-adrenergic agents which comprises the step of administering to the mammal a 4-hydroxy-2,1,3-benzthiadiazole amine compound of the formula



(I)

wherein

R is branched alkyl of 3 or 4 carbon atoms,

or a pharmacologically compatible salt thereof, in a therapeutically effective amount.

4,436,743

3-[N-(LOWER ALKYL)-N-(TETRAHYDRO-3-THIENYL 5,5-DIOXIDE)]SYDNONIMINES

Karl Schönafinger, Uehlfeld; Rudi Beyerle, Frankfurt am Main; Helmut Bohn; Melitta Just, both of Schöneck; Piero A. Martorana, Bad Homburg, and Rolf-Eberhard Nitz, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Fed. Rep. of Germany

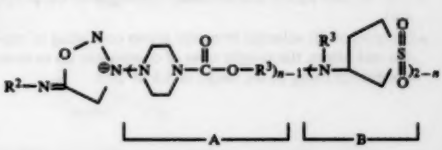
Filed Feb. 19, 1982, Ser. No. 350,366

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1981, 3107933

Int. Cl.³ C07D *271/04*; A61K *31/41*

U.S. Cl. 424—269 24 Claims

1. A pharmacologically-active compound which, in free-base state, is of the formula



wherein

R^2 is —H or —CO—R^4;

R^3 is methyl, ethyl, propyl or isopropyl;

R^4 is aliphatic hydrocarbyl with from 1 to 4 carbon atoms and optionally substituted by alkoxy with from 1 to 3 carbon atoms, cycloaliphatic hydrocarbyl with from 5 to 7 ring crbon atoms, tricycloaliphatic hydrocarbyl with from 7 to 16 ring carbon atoms, alkoxy with from 1 to 6 carbon atoms, phenoxy, napthhoxy, alkoxycarbonyl with from 2 to 7 carbon atoms, phenyl, naphthyl or such phenyl or naphthyl optionally substitutent with from 1 to 3 substitutents each of which is a member selected from the group consisting of halo, alkyl with from 1 to 3 carbon atoms, alkoxy with from 1 to 3 carbon atoms and nitro, and at most 2 of which are nitro; and

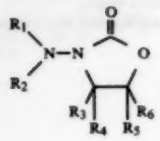
n is 1.

4,436,744
FUNGICIDAL COMPOSITIONS COMPRISING N-AMINO-2-OXO-3-OXAZOLIDINE DERIVATIVES AND FOLPET OR CAPTAN

Jost Harr, Oberwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

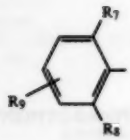
Division of Ser. No. 178,276, Aug. 15, 1980, Pat. No. 4,347,253. This application Jun. 21, 1982, Ser. No. 390,334
Claims priority, application United Kingdom, Apr. 25, 1980, 8013721; Apr. 25, 1980, 8013720; Apr. 25, 1980, 8013719
Int. Cl.³ A01N *43/36, 43/76, 47/10, 59/20*
U.S. Cl. 424—272 **12 Claims**

1. A fungicidal composition comprising a component (a) of formula I



I

wherein
R_1 is



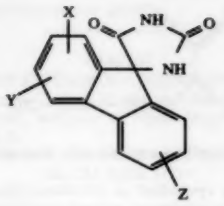
wherein
R_7 and R_8, independently, are C_{1-4}alkyl, halogen or C_{1-4}alkoxy, and
R_9 is hydrogen, C_{1-4}alkyl or halogen,
R_2 is CO-R_{10},
wherein
R_{10} is C_{1-4}alkoxy-C_{1-4}alkyl, C_{1-4}alkylthio-C_{1-4}alkyl, 2-furyl, 2-tetrahydrofuryl, halogenated 2-furyl, halogenated 2-tetrahydrofuryl, 1-imidazolylmethyl, 1-pyrrazolylmethyl, 2-tetrahydrofuryloxymethyl, 2-tetrahydropyranyloxymethyl, or C_{1-4}halogenalkyl, and
R_3, R_4, R_5 and R_6 are independently hydrogen or C_{1-4}alkyl, and
a component (b) selected from the group consisting of captan and folpet; the weight ratio of component (a) to component (b) being in the range of 1:1 to 1:10.

4,436,745
METHOD OF INHIBITING ALDOSE REDUCTASE ACTIVITY

Billie M. York, Jr., Fort Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Apr. 15, 1982, Ser. No. 368,630
Int. Cl.³ A61K *31/415*
U.S. Cl. 424—273 R **18 Claims**

1. A method for treating diabetic complications in mammals comprising administering an effective amount of spiro-(fluoren-9,4'-imidazolidine)-2',5'-dione or pharmaceutically acceptable salt thereof having the formula



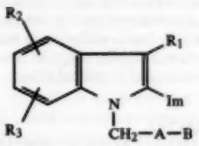
where
x=H, F, Cl, Br, I, SCH_3, $S(O)CH_3$, $S(O_2)CH_3$, OCH_3 and CH_3,
y=H, F, Cl, Br, I, SCH_3, $S(O)CH_3$, $S(O_2)CH_3$, OCH_3 and CH_3, and
z=H, F, Cl, Br, I, OCH_3 and CH_3.

4,436,746
THROMBOXANE SYNTHETASE INHIBITORY N-SUBSTITUTED-2-(1-IMIDAZOLYL)INDOLES

Harris B. Renfroe, West Nyack, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,644
Int. Cl.³ A61K *31/415*; C07D *403/04*
U.S. Cl. 424—273 R **9 Claims**

1. A compound of the formula



(I)

wherein
R_1 represents hydrogen or lower alkyl;
Im represents 1-imidazolyl unsubstituted or substituted by lower alkyl, carboxy, lower alkoxycarbonyl or carbamoyl;
R_2 and R_3 independently represent hydrogen, lower alkyl, halogen, trifluoromethyl, hydroxy, lower alkoxy, lower alkyl-(thio, sulfinyl or sulfonyl); or
R_2 and R_3 together when attached to adjacent carbons represent lower alkylenedioxy;
A represents straight chain or branched alkylene of 1 to 12 carbon atoms, alkenylene of 2 to 12 carbon atoms, alkynylene of 2 to 12 carbon atoms, lower alkylenephenylene lower alkylene, lower alkylenephenylene, phenylene lower alkylene, phenylene, a direct bond, lower alkylene-(thio or oxy)-lower alkylene, lower alkylene-(thio or oxy)-phenylene;
B represents carboxy, lower alkoxycarbonyl, carbamoyl, mono- or di- lower alkylcarbamoyl, cyano or hydroxymethyl; the N-oxide thereof; or a pharmaceutically acceptable salt thereof.

9. A method of treating diseases responsive to thromboxane synthetase inhibition in mammals comprising the administration to a mammal in need thereof of a therapeutically effective amount of a compound of claim 1 in combination with one or more pharmaceutically acceptable carriers.

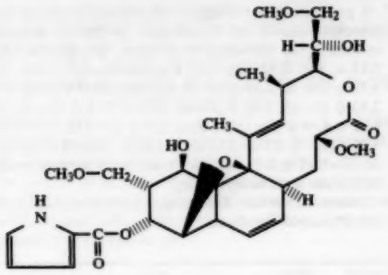
4,436,747

NARGENICIN C_1

Walter D. Celmer, New London; Walter P. Cullen, East Lyme, both of Conn.; Riichiro Shibakawa, Handa, and Junsuke Tone, Chita, both of Japan, assignors to Pfizer Inc., New York, N.Y.

Filed Oct. 21, 1982, Ser. No. 435,793
Int. Cl.³ A61K *31/40;* **C07D** *405/14*
U.S. Cl. 424—274 **3 Claims**

1. Nargenicin C_1, the compound of the formula



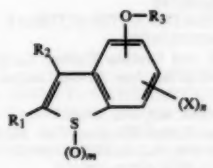
4,436,748

BENZO[b]THIOPHENES

Helen H. Ong, Whippany, N.J., and James A. Profitt, Goshen, Ind., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

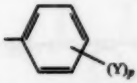
Continuation-in-part of Ser. No. 198,736, Oct. 20, 1980, abandoned. This application Apr. 22, 1981, Ser. No. 256,470
Int. Cl.³ A61K *31/38;* **C07D** *333/64*
U.S. Cl. 424—275 **110 Claims**

1. A compound of the formula



wherein R_1 is lower alkanoyl, formyl or a group of the formula

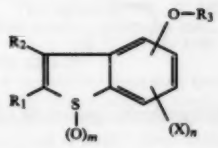
wherein R_{19} and R_{20} are each independently hydrogen or lower alkyl; R_1 and R_2 are hydrogen, lower alkyl, lower cycloalkyl, or a group of the formula



wherein Y is hydrogen, halogen, lower alkyl, lower alkoxy or hydroxy and p is 1 or 2, with the proviso that R_1 and R_2 are not simultaneously hydrogen; R_3 is Z wherein Z is a group of the formula

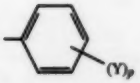
wherein R_4 and R_5 are hydrogen or lower alkyl; R_6 is carboxy, hydroxymethyl, lower alkoxycarbonyl, or hydroxyaminocarbonyl; X is halogen; n is 2 and m is 0, 1 or 2; and the O-R_3 substituent is attached to the 5-position of the benzo[b]thiophene nucleus, or a pharmaceutically acceptable basic addition salt thereof when R_6 is carboxy.

81. A method of reducing blood pressure in mammals comprising administering to a mammal requiring blood pressure reduction a blood pressure reducing effective amount of a compound of the formula



wherein R_1 is lower alkanoyl, formyl or a group of the formula

wherein R_{19} and R_{20} are each independently hydrogen or lower alkyl; wherein R_1 and R_2 are hydrogen, lower alkyl, lower cycloalkyl or a group of the formula



wherein Y is hydrogen, halogen, lower alkyl, alkoxy or hydroxy and p is 1 or 2 with the proviso that R_1 and R_2 are not simultaneously hydrogen; R_3 is Z wherein Z is lower alkyl or a group of the formula

wherein R_4 and R_5 are hydrogen or lower alkyl; R_6 is carboxy, hydroxymethyl, lower alkoxycarbonyl, or hydroxyaminocarbonyl; X halogen or lower alkyl, n is 1 or 2 and m is 0, 1 or 2, or a pharmaceutically acceptable basic addition salt thereof when R_6 is carboxy.

4,436,749

COMPOUNDS OF THE BENZOXEPINE SERIES AND SULPHUR- AND NITROGEN-CONTAINING ANALOGUES; THEIR PROCESSES FOR THE PREPARATION OF THESE PRODUCTS AND THE USE THEREOF IN THE PHARMACEUTICAL FIELD

Philippe Hatinguais; Jean-Francois Patoiseau, and Gilbert Marcelon, all of Castres, France, assignors to Pierre Fabre S.A., Paris, France

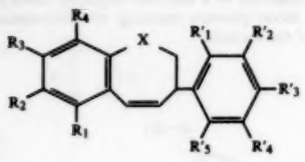
Filed May 10, 1982, Ser. No. 376,645

Claims priority, application France, May 11, 1981, 81 09327; May 4, 1982, 82 07693

Int. Cl.[3] **C07D** *313/08, 337/08, 223/16;* **A61K** *31/335, 31/55, 31/38*

U.S. Cl. 424—278 **5 Claims**

1. A compound corresponding to formula I:



(I)

wherein

X represents oxygen;

R_1 to R_4, and R'_1 to R'_5 independently represent the following:

a hydrogen atom,

a C_1 to C_5 alkoxy or a C_2 to C_5 acyloxy radical,

a hydroxy radical,

a hydroxy C_1 to C_5 alkoxy, mono- or di- C_1 to C_5 alkyl amino C_1 to C_5 alkoxy radical.

4,436,750

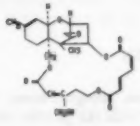
12'-HYDROXYVERRUCARIN J AND ISO-SATRATOXIN H

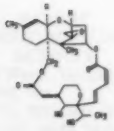
Tim A. Smitka; Richard H. Bunge; James C. French, all of Ann Arbor, and Russell J. Bloem, Dearborn, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 4, 1982, Ser. No. 432,467

Int. Cl.[3] **C07D** *493/22;* **A61K** *31/365*

U.S. Cl. 424—279 **3 Claims**





1. The compound iso-satratoxin H, which is characterized by:

A. An ultraviolet absorption spectrum in methanol with the following properties:

λmax	a_1[1]	ε
226 nm	362	19,100
265 inflection	(219)	11,600

B. An infrared absorption spectrum in CCl_4 having principal absorptions at: 3560, 3440, 2975, 2930, 2855, 1730, 1660, 1595, 1195, 1165, 1145, 1090, 1080, and 970 reciprocal centimeters;

C. A proton nuclear magnetic resonance spectrum having principal signals at: (s=singlet, t=triplet, q=quartet, m=multiplet, dd=double doublet, dt=double triplet); 0.83 s; 1.35 d (J=7); 1.43 s (cyclohexane); 1.61s (H_2O); 1.72 s; 1.92 m; 2.18 dt (J=5,15); 2.45 dd (J=8,15); 2.78 m; 2.83 d (J=4); 3.14 d (J=4); 3.39 s; 3.59 d (J=5); 3.9 m; 4.22 s; 4.54 d (J=13); 5.06 s; 5.39 d (J=17); 5.43 d (J=5); 5.80 d (J=3); 5.9 m; 5.93 d (J=12); 6.52 dd (J=10,12); 7.26 dd (J=10,17); 7.27 s (chloroform) parts per million downfield from tetramethylsilane;

D. Carbon-13 Nuclear Resonance Spectrum in $CDCl_3$ (FIG. 10); Principal signals at:

166.67	79.13		61.5	
166.35	78.69		48.97	
154.91	78.42		48.05	
142.35	77.02	$CDCl_3$	43.36	
140.40	75.62		34.46	
134.15	75.35		27.61	
133.56	74.65		25.45	
120.98	74.16		23.30	
118.88	68.23		20.33	
118.23	65.48		15.80	
93.10*	64.02		7.54	Parts per million downfield from tetramethylsilane

*Instrument noise

4,436,751

NITROBENZYL MONATES ANTIBACTERIAL COMPOUNDS

Peter J. O'Hanlon, Redhill, and Graham Walker, Guildford, both of England, assignors to Beecham Group Limited, England

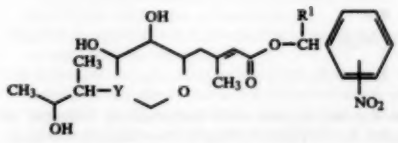
Filed Dec. 11, 1981, Ser. No. 330,012

Claims priority, application United Kingdom, Dec. 31, 1980, 8041559; Aug. 18, 1981, 8125168; Oct. 9, 1981, 8130541

Int. Cl.[3] **A61K** *31/35;* **C07D** *309/10*

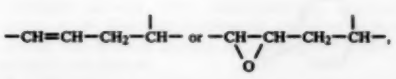
U.S. Cl. 424—283 **7 Claims**

1. A compound of formula (II):



(II)

Y is



R^1 is hydrogen or C_{1-4} alkyl,

and the depicted nitro group is in the meta- or para- position on the benzene ring.

5. A method for treating mycoplasmal infections in humans

and animals which comprises administering an effective, nontoxic amount of a compound according to claim 1 to a human or animal having a micoplasmal infection.

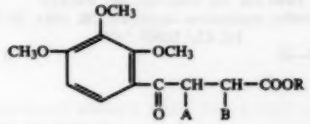
4,436,752

TREATMENT OF GASTRIC AND GASTRO-DUODENAL DISORDERS WITH DERIVATIVES OF PHENYL ALIPHATIC CARBOXYLIC ACIDS

Yani Christidis, and Robert Fournex, both of Paris, France, assignors to Roussel Uclaf, Paris, France

Filed Apr. 14, 1982, Ser. No. 368,209
Claims priority, application France, Apr. 17, 1981, 81 07802
Int. Cl.³ A61K *31/19*
U.S. Cl. 424—317 4 Claims

1. A method of treating a patient suffering from hyperchlorhydria, gastric or gastro-duodenal ulcers, gastritis, hiatal hernia, or gastric or gastro-duodenal ailments accompanied by gastric hyperacidity, comprising administering to said patient an anti-ulcer and anti-gastric secretory effective amount of a compound of the formula (I)



(I)

in which A and B together represent a double bond or else A represents a hydrogen atom and B represents a hydroxy radical, and in which R represents a hydrogen atom or an alkyl radical containing from 1 to 5 carbon atoms, in their racemic or optically active forms, and pharmaceutically acceptable salts of said compound wherein R represents a hydrogen atom.

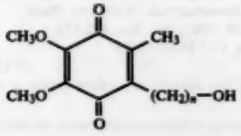
4,436,753

METHOD FOR THERAPY OF ISCHEMIC DISEASE

Isuke Imada, Izumi; Akinobu Nagaoka, Kawanishi, and Minoru Hirata, Ikeda, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 17, 1980, Ser. No. 217,538
Claims priority, application Japan, Dec. 30, 1979, 54-171125
Int. Cl.³ A61K *31/12*
U.S. Cl. 424—331 8 Claims

1. A method of improving cellular metabolism in the treatment of ischemic diseases comprising cerebral infarction, cerebral hemorrhage, cerebral hemorrhagic infarction, cerebral embolus, cardiac failure, nephrosclerosis, proteinuria due to vascular lesion and renovascular hypertension, which comprises administering to a mammal suffering from the disease a compound of the formula:



wherein n is an integer of from 4 to 22, in an amount of about 0.006 mg to 12 mg per kilogram of body weight of the mammal per day.

4,436,754

DISINFECTING AND STERILIZING COMPOSITION

Paul T. Jacobs, Arlington, Tex., assignor to Surgikos, Inc., Arlington, Tex.

Continuation-in-part of Ser. No. 178,218, Aug. 14, 1980, abandoned. This application Jan. 28, 1982, Ser. No. 343,678
Int. Cl.³ A01N *35/00*
U.S. Cl. 424—333 10 Claims

1. A phenol-free sporicidal composition having low odor and irritation potential comprising an aqueous solution containing 0.1% to 4% by weight of a 2 to 6 carbon atom saturated dialdehyde and containing as an odor reducing agent 5% to 25% by weight of a diol or monosubstituted diol of the formula $RO(CH_2CH_2O)_n—CH_2CH_2OH$, where R is H or CH_3— and n is an integer from 1 to about 22.

4,436,755

SEPARATION OF FRUIT JUICE WITH FIBERS OF AN OLEFIN POLYMER

Luciano Perdomini; Elia Tonon, both of Verona, and Lanfranco Paronetto, Negrar, all of, assignors to Montedison S.p.A. and Chimici Perdomini S.p.A., both of Milan, Italy

Continuation of Ser. No. 121,024, Feb. 13, 1980, abandoned. This application Jan. 27, 1982, Ser. No. 343,174
Claims priority, application Italy, Feb. 14, 1979, 20188 A/79
Int. Cl.³ C12G *1/00*; A23L *2/02*
U.S. Cl. 426—15 8 Claims

1. A method for separating fruit juice from fruit material containing solids comprising mixing the fruit material containing solids with fibrous materials which are wettable or have been treated to render them wettable and which consist of fibers of an olefin polymer having a surface area of at least 1 m^2/g, a mean length of 0.5–5 mm, and a mean diameter of 1 to 500 microns, and separating juice from the mixture of fibrous material and fruit material containing solids.

4,436,756

METHOD FOR EXTRACTING MYCOTOXINS FROM VEGETABLE FLOURS

Marco Canella, and Giancarlo Sodini, both of Rome, Italy, assignors to E.N.I. Ente Nazionale Indrocarburi, Rome, Italy

Continuation of Ser. No. 68,141, Aug. 20, 1979, abandoned, which is a continuation of Ser. No. 862,774, Dec. 21, 1977, abandoned, which is a continuation of Ser. No. 705,014, Jul. 14, 1976, abandoned. This application Mar. 16, 1983, Ser. No. 475,915
Claims priority, application Italy, Jul. 15, 1975, 25422 A/75
The portion of the term of this patent subsequent to Feb. 7, 1995, has been disclaimed.
Int. Cl.³ A23L *1/20*
U.S. Cl. 426—430 10 Claims

1. A method for the extraction of mycotoxins from mycotoxin contaminated vegetable flours comprising the step of treating said flours or the products obtained with an organic solvent which contains at least a polar group, admixed with an aqueous solution of an electrolyte having an acidic nature.

4,436,757

CRYOGENIC PROCESS FOR DECORTICATION AND HULLING OF SUNFLOWER SEEDS

Donald A. Lange, Brooklyn Park; Marc C. Hanson, St. Louis Park, and Kenneth J. Kriva, Minneapolis, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Sep. 7, 1982, Ser. No. 415,203
Int. Cl.³ A23L *1/212, 1/36*
U.S. Cl. 426—438 15 Claims

1. A process for decorticating and hulling sunflower seeds, comprising the steps of:

A. contacting unshelled sunflower seeds with a cryogenic liquid gas for a time sufficient to allow penetration of the liquid gas into the seeds to form infused seeds, and immediately thereafter,

B. contacting the cryogenically infused seeds with a liquid or aqueous heating medium at least about 100° F. warmer than the boiling temperature of the gas to vaporize the gas and thermally stress the seed hulls whereby a fraction of the seeds are decorticated and hulled, thereby forming a mixture of hulled meats, hull fragments, partially decorticated seeds and nondecorticated seeds, and then

C. separating the hulled meats from the mixture.

4,436,758

DOUGH CONDITIONING COMPOSITION

Jerome B. Thompson, Box 231 - Rte. 3, Cumberland, Md. 21502

Filed Aug. 5, 1980, Ser. No. 175,142
Int. Cl.³ A21D *10/00*
U.S. Cl. 426—549 12 Claims

1. A stable dough conditioning composition for addition in a concentrated form to yeast-leavened dough to eliminate the need for the addition of ammonium salts to said dough, said composition consisting essentially of the following active ingredients:

a solid organic acid: 60–98%

A bromate salt compatible with said acid: 0.4–4%.

4,436,759

PRODUCTION OF SHAPED FOOD PRODUCTS

David M. Trilling, Wellesley, Mass., and Yechiel Smadar, Ramat Hasharon, Israel, assignors to Caribou Fisheries, Inc., Boston, Mass.

Filed Mar. 26, 1982, Ser. No. 362,301
Int. Cl.³ A23L *1/04*
U.S. Cl. 426—573 26 Claims

1. A process for the production of shaped food products from comminuted, granulated or chopped foodstuffs comprising (1) preparing a slurry of one or more foodstuffs with a binder, a gelling agent and a bivalent ion releasing material; said slurry being prepared by first mixing together the binder, the gelling agent and the bivalent ion releasing material to form a dry blend, the dry blend of these materials is then added and mixed with the foodstuffs to form the slurry, the resultant slurry is then allowed to stand for a period of time sufficient to allow the release of ions from the bivalent ion releasing material so as to form a gel; said binder being selected from the group consisting of a cellulose ether, a gum and mixtures thereof and being present in an amount of from about 0.10% to about 6.0% by weight based on the weight of the foodstuff; said gelling agent being an alkali metal alginate and being present in an amount of from about 0.1% to about 1.0% based on the weight of the foodstuffs; said bivalent ion releasing material being present in an amount of from about 0.001% to about 0.004%; (2) preparing a shaped food product by shaping the slurry by means of a shaping and forming device; and (3) processing the shaped food product into a final product.

4,436,760

LOW-CALORIE SPREAD BASED ON A LOW-MELTING BUTTERFAT FRACTION

Laurentius A. M. Verhagen, and Leendert G. Warnaar, both of Vlaardingen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Mar. 26, 1982, Ser. No. 362,413
Claims priority, application Netherlands, Apr. 2, 1981, 8101638
Int. Cl.³ A23D *3/02*
U.S. Cl. 426—603 3 Claims

1. A process for producing a low-calorie water-in-oil emulsion spread based on butterfat, comprising the steps of:

(a) melting butterfat by heating said butterfat up to a temperature not exceeding 45° C.;

(b) cooling the molten butterfat to a temperature ranging from 20° C. to 30° C. in the absence of a solvent to fractionate said butterfat thereby yielding a higher melting stearin fraction and a lower melting olein fraction;

(c) separating from said stearin fraction an olein fraction which has the solid fat content noted below:

N_{10}=24–40,

N_{20}=3–8 and

N_{30}=0–3;

(d) emulsifying an aqueous phase with a pH in the range of about 4.0 to about 7.0 and constituting from about 20% to about 70% of the total spread, in a fatty phase essentially consisting of said separated olein and constituting about 30% to about 80% of the total spread to obtain a water-in-oil emulsion; and

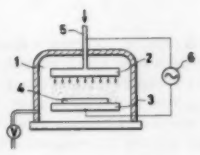
(e) simultaneously cooling and working said emulsion under conditions leading to a spread having a hardness of at least 80 g/cm² at 20° C., and at most 1300 g/cm² at 10° C. and of at most 1800 g/cm² at 5° C.

4,436,761

METHOD FOR TREATMENT OF METAL SUBSTRATE FOR GROWTH OF HYDROGEN-CONTAINING SEMICONDUCTOR FILM

Yutaka Hayashi; Mitsuyuki Yamanaka, and Hideyuki Karasawa, all of Ibaraki, Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Jul. 26, 1982, Ser. No. 401,813
Claims priority, application Japan, Jul. 30, 1981, 56-119874
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—38 5 Claims



1. A method for the treatment of a cleaned metal substrate for the growth of a hydrogen-containing semiconductor film on said metal substrate which comprises exposing the surface of said cleaned metal substrate on which said semiconductor film is to be deposited to plasma consisting essentially of hydrogen in advance of the deposition thereon of said semiconductor film to cause hydrogen to be adsorbed on the surface of the substrate, thereby improving the electric contact characteristic between the metal substrate and the semiconductor film deposited thereon.

2. The method according to claim 1, wherein subsequently to the exposure of the surface of the metal substrate to hydrogen plasma, the semiconductor film is deposited in situ on the treated surface of the metal substrate.

4,436,762

LOW PRESSURE PLASMA DISCHARGE FORMATION OF REFRACTORY COATINGS

Walter P. Lapatovich, Watertown; Joseph M. Proud, Wellesley Hills, and Leslie A. Riseberg, Sudbury, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jul. 26, 1982, Ser. No. 402,176
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—39 10 Claims

1. A coating process for coating a surface inside a vessel comprising

providing a vessel having contents comprising an inert gas, and reactants, said reactants consisting essentially of SiO_2 and a halide of a metal selected from the group consisting of B, Al, Ga, In, Tl, and combinations thereof; and

generating a plasma within said vessel containing said inert

gas, and said reactants, to form a refractory metal oxide protective coating on a surface inside the vessel.

4,436,763

METHOD OF PLATING A WIRE WITH METAL

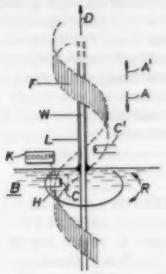
Paul Metz, Luxembourg, Luxembourg, assignor to Arbed S/A, Luxembourg

Filed Jan. 19, 1983, Ser. No. 459,197

Claims priority, application Luxembourg, Jan. 26, 1982, 83897

Int. Cl.³ B05D 3/14

U.S. Cl. 427—47 **6 Claims**



1. A method of plating a strand with a metal, the method comprising the steps of:

melting the metal and forming a bath of the molten metal;

displacing the strand longitudinally through the molten-metal bath so the strand leaves the bath at a surface thereof, whereby the molten metal of the bath sticks to the strand and forms a molten metallic layer thereon;

forming around the strand generally at the surface a helicoidal magnetic field generally centered on the strand and positioned to exert on the metallic layer a magnetic force generally parallel to the strand and on the bath a rotary force generally centered on the strand; and

polarizing the field in accordance with desired layer thickness.

4,436,764

METHOD AND APPARATUS FOR SURFACE-HARDENING TREATMENT OF SYNTHETIC RESIN SHAPED ARTICLES

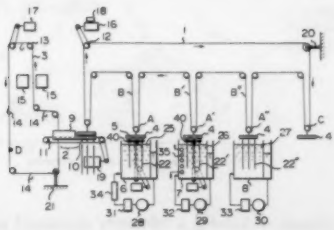
Atushi Nakazima; Mitisuke Edamatsu, and Kenji Kushi, all of Otake, Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Filed Jul. 21, 1982, Ser. No. 400,588

Claims priority, application Japan, Jul. 28, 1981, 56-118756

Int. Cl.³ B05D 3/06

U.S. Cl. 427—54.1 **10 Claims**



1. A method for the surface-hardening treatment of a synthetic resin shaped article wherein a synthetic resin shaped article is dipped in a surface-hardening solution; the synthetic resin shaped article is gradually pulled up therefrom thereby being coated with the surface-hardening solution; and the coated shaped article is irradiated with ultraviolet rays to cure the coating, CHARACTERIZED IN THAT (a) the synthetic resin shaped article is dipped in succession in a washing pretreatment tank, a drying tank having warm water or an organic solvent and a hardening solution tank while the synthetic resin shaped article is conveyed by a first conveyor, and then, the synthetic resin shaped article is transferred from the first conveyor through an intermediate conveyor to a second conveyor whereby the synthetic resin shaped article is conveyed to an ultraviolet ray-curing step; (b) the synthetic resin shaped article is introduced to and withdrawn from the respective steps in the state where the synthetic resin shaped article is hung on a hanger, and one or a plurality of hangers are attached to each of a plurality of portions of the first conveyor so that the synthetic resin shaped articles are simultaneously subjected to the dipping treatment in the respective tanks, whereas the hangers are conveyed one by one from the intermediate conveyor to the second conveyor where the synthetic resin shaped articles are separately hung; (c) in each of the washing pretreatment tank, the drying tank comprising warm water or an organic solvent and the hardening solution tank, the liquid is overflowed therefrom and circulated via a filter to each tank; and (d) the surface-hardening treatment is carried out under such conditions that the surface-hardening solution in the hardening solution tank and the atmosphere above the hardening solution tank are maintained at room temperature and the dew point of said atmosphere is maintained at a level lower by at least 3° C. than the temperature of the surface-hardening solution.

7. An apparatus for the surface-hardening treatment of a synthetic resin shaped article by dipping a synthetic resin shaped article in a surface-hardening solution, gradually pulling up the synthetic resin shaped article to coat the surface of the synthetic resin shaped article with the surface-hardening solution, and irradiating the coated shaped article with ultraviolet rays to cure the coating, said apparatus comprising (a) a conveyor system including a first conveyor for conveying the synthetic resin shaped article in succession through a washing pretreatment tanks, a drying tank and a hardening solution tank to effect dipping in the respective tanks, a second conveyor for conveying the synthetic resin shaped article to an ultraviolet ray-curing device, and an intermediate conveyor for transferring secondary hangers each having the synthetic resin shaped article hung thereon from the first conveyor to the second conveyor; one or more of said secondary hangers each having the synthetic resin shaped article hung thereon being detachably attached to each of a plurality of primary hangers attached to the first conveyor; and said secondary hangers being conveyed separately and one by one from the first conveyor through the intermediate conveyor to the second conveyor whereby the secondary hangers are conveyed one by one to the ultraviolet ray-curing device; (b) pumps for circulating the liquids through pipe lines from the washing pretreatment tank, drying tank and hardening solution tank to the respective tanks, and filters arranged downstream of said pumps in the respective circulating pipe lines; (c) a device surrounding the respective conveyors, and the washing pretreatment tank, the drying tank, the hardening solution tank and the ultraviolet ray-curing device to define a substantially closed treating chamber; and (d) a device including an air feeder for feeding air into the treating chamber, a filter for removing dusts from the air in the treating chamber and a heat exchanger for adjusting the temperature and humidity of the air in the treating chamber.

4,436,765

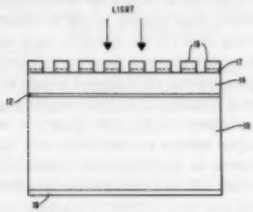
METHOD FOR FORMING INDIUM OXIDE/N-SILICON HETEROJUNCTION SOLAR CELLS

Tom Feng, Morris Plains, and Amal K. Ghosh, New Providence, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 258,935, Apr. 30, 1981, Pat. No. 4,366,335, which is a continuation-in-part of Ser. No. 222,367, Jan. 5, 1981, abandoned. This application Sep. 24, 1982, Ser. No. 422,668

Int. Cl.³ H01L *31/18*

U.S. Cl. 427—74 **17 Claims**



1. A method for forming a high efficiency indium oxide/n-silicon heterojunction solar cell comprising:

providing an n-type silicon substrate having at least one major surface area coated with a thin layer of silicon oxide, SiO_2, said oxide layer being less than about 30 Angstroms thick;

contacting said substrate with an atomized liquid solution of anhydrous indium trichloride ($InCl_3$), water, and an organic ester, and/or an alcohol having a boiling point less than about 250° C. while heating and maintaining said substrate at a temperature ranging from about 350° C. to about 450° C. to deposit a layer of semiconductor indium oxide on said oxidized silicon, said indium oxide forming a heterojunction to the oxidized silicon substrate; and

ceasing said heating and rapidly cooling said substrate upon completion of the deposition of said indium oxide to produce a heterojunction solar cell having an Air Mass One solar efficiency in excess of about 10%.

4,436,766

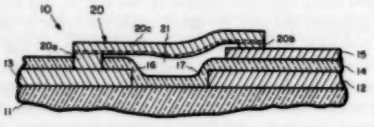
PLATED BRIDGE STEP-OVER CONNECTION FOR MONOLITHIC DEVICES AND METHOD FOR MAKING THEREOF

Ralph E. Williams, Richardson, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 15, 1981, Ser. No. 263,821

Int. Cl.³ H01L *21/88*

U.S. Cl. 427—96 **3 Claims**



1. A method of forming a step-over connection in a monolithic device having a substrate, a plurality of laterally spaced metalizations supported by said substrate, and a dielectric layer over at least one of said metalizations, comprising the steps of:

providing a first resist layer having a finite thickness over said metalizations and said dielectric layer;

forming first and second openings in said first resist layer layer exposing at least one selected surface area of said dielectric layer and a selected first area of said metalizations;

etching said dielectric layer in said selected surface area thereof to expose a selected second area of said metalizations;

plating metal onto said first and second areas of said metalizations to form first and second pillars having a height about equal to said thickness of said first resist layer;

forming a thin sputtered metal layer over said first resist layer and said pillars;

providing a second resist layer over said sputtered metal layer;

forming a connector bridge pattern opening in said second resist layer, said connector bridge pattern opening exposing said first and second pillars and a connecting area of said sputtered metal layer therebetween;

plating metal onto said pillars and exposed sputtered metal layer to form a metal bridge connector spanning the space between said metalizations; and

removing said first and second resist layers and said sputtered metal layer external to said bridge pattern opening.

4,436,767

SLURRY SEAL METHOD USING ACRYLAMIDE AND RUBBER MODIFIED ASPHALTIC EMULSION

Anthony V. Grossi; Louis T. Hahn; Alfred Marzocchi, all of Newark, and Charles E. Bolen, Heath, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 27, 1982, Ser. No. 453,067

Int. Cl.³ B05D *5/10*

U.S. Cl. 427—138 **11 Claims**

1. In a pavement surface-treating method comprising applying a slurry seal composition to pavement, said composition comprising aggregate and a slow setting asphalt emulsion, the improvement wherein said emulsion further comprises, in admixture therewith, an effective breaktime decreasing amount of an emulsion containing the prereacted reaction product of an acrylamide asphalt having a viscosity of less than about 120,000 cps (at 140° F.), a vinyl aromatic monomer and a rubbery polymer.

4,436,768

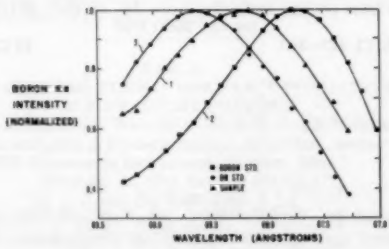
REFRACTORY STRUCTURE AND PROCESS FOR THE PREPARATION THEREOF

John L. Freeouf, Peekskill; William J. Haag, Poughkeepsie, and Jerry M. Woodall, Bedford Hills, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 148,610, May 12, 1980, abandoned. This application Aug. 25, 1982, Ser. No. 411,218

Int. Cl.³ B05D *3/02, 5/00*

U.S. Cl. 427—227 **21 Claims**



1. A process of forming a refractory compound structure wherein said compound is a combination of a metallic element wherein said metallic element is solid at normal room temperature and has a vapor pressure of at least one order of magnitude lower than that of said nonmetallic element in the temperature

range at which decomposition of the refractory compound occurs, and wherein the structure has an adherent dense elemental layer of said refractory compound over the surface of the structure which comprises:

evacuating a chamber containing a refractory compound structure to a pressure less than about 10^{-3} torr; and heating said refractory compound structure in said chamber at a decomposition temperature of about 1500° C. to about 1800° C. for a time sufficient to form an elemental layer of said metallic component of said refractory compound on said structure.

4,436,769

METAL ORGANIC VAPOR DEPOSITION PROCEDURE FOR PREPARING GROUP III—V COMPOUNDS ON A HEATED SUBSTRATE

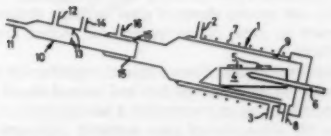
Rodney H. Moss, Felixstowe, and Marc M. Faktor, Bushey Heath, both of England, assignors to British Telecommunications, London, England

Filed Nov. 18, 1981, Ser. No. 322,438

Claims priority, application United Kingdom, Nov. 18, 1980, 8036902; Feb. 17, 1981, 8104953

Int. Cl.³ C23C *11/00, 13/00*

U.S. Cl. 427—252 10 Claims



1. In a method of forming a group III-group V compound on a heated substrate by causing vapor streams carrying respectively a group III alkyl derivative and a group V hydride to mix and impinge on the substrate, whereby the group III alkyl derivative and the group V hydride react to form the group III-group V compound, the improvement which comprises: modifying the group III alkyl derivative by the donation thereto of electron density to form a weaker Lewis acid; mixing the resulting modified group III alkyl derivative with the group V hydride; and impinging the mixture on the substrate.

4,436,770

OXYNITRIDE FILM AND ITS MANUFACTURING METHOD

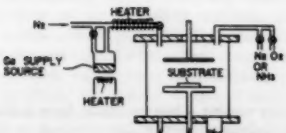
Jun-ichi Nishizawa, and Ikuo Shiota, both of Sendai, Japan, assignors to Budda Hajia Handotai Kenkyu Shinkokai, Sendai, Japan

Division of Ser. No. 215,442, Dec. 11, 1980, Pat. No. 4,331,737, which is a continuation of Ser. No. 23,766, Mar. 26, 1979, abandoned. This application Feb. 24, 1982, Ser. No. 351,619

Claims priority, application Japan, Apr. 1, 1978, 53-38580; Jul. 14, 1978, 53-86573

Int. Cl.³ B05D *5/00*; C23C *11/00, 15/00*

U.S. Cl. 427—255.3 9 Claims



1. A method of manufacturing a film substantially formed of oxynitride of one substance selected from the group consisting of gallium, aluminum and their mixture, the oxynitride having an oxygen-to-nitrogen ratio of at least 0.15, comprising the steps of:

adding a controlled amount of water to a predetermined amount of halide of said one substance;

subjecting the water-added halide to ammonia treatment to form a supply source;

transporting said supply source onto a heated substrate by a carrier gas and forming said film on said substrate by reaction of thermal decomposition of said supply source thereon.

4,436,771

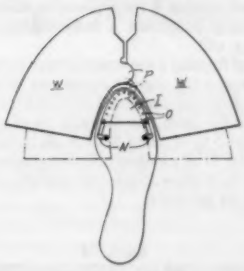
METHOD OF LASTING SHOES

Robert C. Simmonds, Jr., Boxford, and Andrew J. Gilbride, Swampscott, both of Mass., assignors to USM Corporation, Farmington, Conn.

Filed Mar. 2, 1983, Ser. No. 469,503

Int. Cl.³ A43D *29/00*

U.S. Cl. 427—284 6 Claims



1. Method of lasting shoes, using adhesive, from the toe to at least over the ball region thereof, wherein the toe and forepart region of the shoe is inwiped by means of a pair of wiper plates mounted for inwiping movement about a common pivot located at or adjacent the toe end of the shoe, and wherein the adhesive is applied partly by means of an imprinter plate which is pressed against the shoe bottom and partly by nozzles movable along opposite sides of the shoe, characterized in that the region to which adhesive is applied by means of the imprinter plate extends from the toe end of the shoe and lies within, but is substantially smaller than, the region inwiped by said pair of wiper plates.

4,436,772

ANTICORROSIVE COATING PROCESS

Masaaki Yamabe, Machida; Hiromichi Higaki, Yokohama; Toshio Shinohara, Yokohama; Hiroyuki Tanabe, Yokohama, and Shunsuke Nakayama, Yokohama, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka and Asahi Glass Company, Ltd., Tokyo, both of, Japan

Filed Jan. 24, 1983, Ser. No. 460,380

Claims priority, application Japan, Feb. 5, 1982, 57-16361

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—379 6 Claims

1. An anticorrosive coating process which comprises:

(i) a step of applying on a substrate a zinc-rich paint or an epoxy resin primer coating, followed by air-drying,

(ii) a step of applying thereon an intermediate synthetic resin coating, followed by air-drying, and

(iii) a step of applying thereon a top coating comprising (a) a fluorine-containing copolymer composed of from 40 to 60 molar % of a fluoroolefin, from 5 to 45 molar % of cyclohexylvinyl ether, from 5 to 45 molar % of an alkylvi-

nyl ether, from 3 to 15 molar % of a hydroxyalkylvinyl ether and from 0 to 30 molar % of other comonomer and (b) a polyisocyanate, followed by air-drying.

4,436,773

ANTICORROSIVE COATING PROCESS

Masaaki Yamabe, Machida; Hiromichi Higaki, Yokohama; Toshio Shinohara, Yokohama; Hiroyuki Tanabe, Yokohama, and Shunsuke Nakayama, Yokohama, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka and Asahi Glass Company Ltd., Tokyo, both of, Japan

Filed Jan. 24, 1983, Ser. No. 460,383

Claims priority, application Japan, Feb. 5, 1982, 57-16359; Feb. 5, 1982, 57-16360

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—380 12 Claims

1. An anticorrosive coating process which comprises:

(i) a step of forming a primer coating layer by applying on a substrate an oil-type anticorrosive coating or an alkyd resin-type anticorrosive coating as a primer coating, followed by air-drying,

(ii) a step of forming a binder coating layer by applying on the primer coating layer a phenol-modified alkyd resin-type coating containing a flaky pigment, followed by air-drying, and

(iii) a step of forming a top coating layer by applying on the binder layer a top coating comprising (a) a fluorine-containing copolymer composed of from 40 to 60 molar % of a fluoroolefin, from 5 to 45 molar % of cyclohexylvinyl ether, from 5 to 45 molar % of an alkylvinyl ether, from 3 to 15 molar % of a hydroxyalkylvinyl ether and from 0 to 30 molar % of other comonomer and (b) a polyisocyanate, followed by air-drying.

4,436,774

RUBBER/POLYMERIC MATERIAL COMPOSITES

Ian Biggs, Sutton Coldfield, and Ronald S. Goy, Staffordshire, both of England, assignors to Dunlop Limited, London, England

Continuation of Ser. No. 941,249, Sep. 11, 1978, abandoned. This application Jun. 21, 1982, Ser. No. 390,709

Claims priority, application United Kingdom, May 12, 1978, 19167/78

Int. Cl.³ B05D *3/02;* B29H *5/02, 5/10*

U.S. Cl. 427—40 48 Claims

1. A method of making a composite by bonding a rubber to a polymeric material comprising the steps of (i) applying to a vulcanisable rubber composition a treatment agent which will halogenate and/or oxidise the rubber surface, (ii) vulcanising the rubber composition by means of a fluidised bed (iii) contacting the vulcanised treated rubber composition with a polymeric material and (iv) causing or allowing the polymeric material to solidify in contact with the rubber composition to form the composite.

4,436,775

HARD METAL BODY AND METHOD OF MAKING SAME

Donald E. Graham, St. Clair Shores, Mich., assignor to General Electric Company, Detroit, Mich.

Division of Ser. No. 276,918, Jun. 24, 1981, Pat. No. 4,343,865. This application May 25, 1982, Ser. No. 381,773

Int. Cl.³ C23C *11/02;* B22F *7/02*

U.S. Cl. 427—419.7 4 Claims

1. A method of producing a multi-layered wear resistant article with improved bonding strength between the layers comprising the steps of:

providing a substrate formed from a cemented sintered metal carbide material;

depositing a bonding layer on said substrate, said bonding layer being formed of boron; and

coating said bonding layer with a wear resistant material formed from titanium boride.

4,436,776

PROCESS FOR CUSTOMIZING GLASS GREETING CARDS AND GLASS GREETING CARD PRODUCT

William Wojcik, 3909 Northaven Dr., Charlotte, N.C. 28206

Filed May 4, 1983, Ser. No. 491,356

Int. Cl.³ A47G *1/12;* B44C *1/22;* C03C *15/00, 25/06*

U.S. Cl. 428—14 6 Claims

6. A customized glass greeting card comprising:

(a) first and second sheets of glass having a design thereon formed by areas of transparent and etched, translucent surfaces;

(b) first and second frames hinged together on one side thereof for holding said first and second sheets of glass, respectively, so as to resemble a folded card;

whereby the clear, etched glass transmits light and appears dark relative to the translucent areas of the glass which reflect light and appear relatively light and so resemble a printed card whether the hinged frames are open or closed together and further whereby only the design on the top sheet of glass is visible when the hinged frames are closed together.

4,436,777

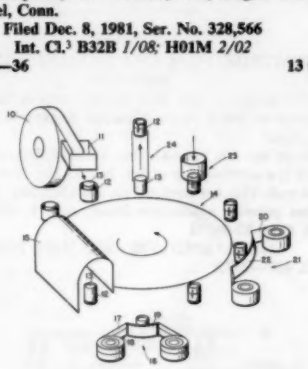
METHOD FOR MAKING DECORATED BATTERY CASINGS

Kenneth M. Karpiloff, New Rochelle, N.Y., assignor to Duracell Inc., Bethel, Conn.

Filed Dec. 8, 1981, Ser. No. 328,566

Int. Cl.³ B32B *1/08;* H01M *2/02*

U.S. Cl. 428—36 13 Claims



1. A method for making a battery casing from a decorated heat shrinkable enclosure member characterized in that said method comprises the steps of placing said enclosure member on a support member and shrinking said heat shrinkable enclosure member thereon, decorating said enclosure member while on said support member, removing said decorated heat shrunk enclosure member from said support member and fixedly enclosing a battery therewithin.

10. A decorated battery casing made in accordance with the method of claims 1, 2, 3, 4, 5, 6, 8 or 9.

4,436,778

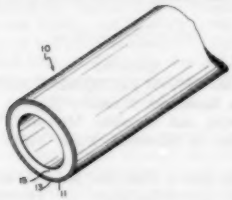
MULTILAYER TUBULAR BODY WITH UNCENTERED BARRIER LAYER

Jeffrey N. Dugal, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Continuation of Ser. No. 308,292, Oct. 5, 1981, abandoned. This application Apr. 22, 1983, Ser. No. 485,760

Int. Cl.³ B29F 1/10; B32B 9/04

U.S. Cl. 428—36 13 Claims



1. A nonflexible thick-walled tubular article with a wall thickness in excess of 0.1 inch having a heat-degradable polyvinylidene barrier layer with a marked decrease in relative volume of entrapped inclusions per given length, said article capable of being biaxially oriented into a container possessing low gas permeability comprising at least three cojoined polymeric layers with at least one intermediate polymeric layer being a polyvinylidene chloride barrier layer, said article being formed by simultaneously coextruding and bonding the polymeric layers together as a series of melted streams with the intermediate polyvinylidene chloride barrier layer being located proximate the exterior surface thereof, the outer polymeric layer being less thick than the article portion within the polyvinylidene chloride barrier layer, and quenching said series of melted streams from the outer exterior surface of said series proximate said polyvinylidene chloride barrier layer, said polyvinylidene chloride barrier layer being located within the outer about one percent to 33 percent of the total thickness and having a thickness of from about 1 percent to about 20 percent of the total thickness of the cojoined, multilayered tubular article.

8. A method of substantially reducing gaseous inclusions in coextruding a solid nonflexible tubular body having at least three polymeric layers including inner and outer layers of thermoplastic material selected from a group comprising polyolefins, polystyrenes, and polyesters, and an intermediate polyvinylidene chloride barrier layer therein, said body having a wall thickness of about 0.1 inch to about 0.5 inch and being capable of being axially oriented into a container possessing low gas permeability, which comprises forming a series of melted streams of the polymeric materials, enveloping the series of melted streams to form separate and defined cojoined tubular layers one upon the other, and introducing the polyvinylidene chloride barrier layer intermediately within said series and proximate the exterior surface of said tubular layers, said polyvinylidene chloride barrier layer being within the outer 1 percent to 33 percent of the total thickness of the cojoined tubular layers and having a thickness of from about 1 percent to about 20 percent of total thickness of the cojoined tubular layers, and thereafter quenching said series of cojoined tubular layers from their outer exterior surface proximate said barrier layer to form a cojoined multilayered solid thick-walled body.

4,436,779

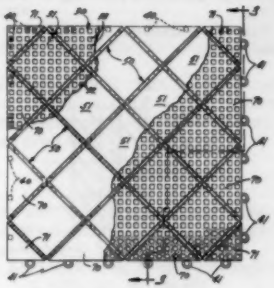
MODULAR SURFACE SUCH AS FOR USE IN SPORTS

K. Anthony Menconi, 6835 County Line La., Burr Ridge, Ill. 60521, and Joseph F. Gribauskas, Jr., 21 W. 246 Audubon Rd., Lombard, Ill. 60148

Filed Jul. 2, 1982, Ser. No. 394,528

Int. Cl.³ B32B 3/00

U.S. Cl. 428—169 13 Claims



1. A module for a modular surface comprising a tile having an upper surface and a plurality of support means underlying the surface for engaging an undersurface, the tile being flexible to accommodate imperfections in the undersurface while keeping the support means in contact therewith, continuous floating expansion joints dividing the surface into square pads supported by said support means and oriented with diagonals generally parallel to the tile edges whereby the number and effectiveness of the expansion joints is greatest along the tile diagonal to maintain said support means in contact with the undersurface under conditions of changing temperature.

4,436,780

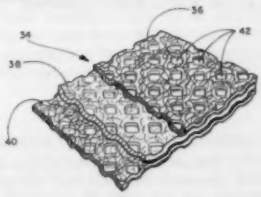
NONWOVEN WIPER LAMINATE

Harry W. Hotchkiss; Patrick J. Notheis, both of Cobb County, and Stephen M. Englebert, Cherokee County, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sep. 2, 1982, Ser. No. 414,214

Int. Cl.³ B32B 27/14

U.S. Cl. 428—198 9 Claims



1. Wiper comprising a laminate including a relatively high basis weight web having a basis weight in the range of from about 17 to 170 g/m² comprising meltblown thermoplastic microfibers having an average diameter in the range of up to about 10 microns and treated with a surfactant and, on both sides of said meltblown web, a relatively low basis weight web having a basis weight in the range of from about 7 to 34 g/m² comprising generally continuous thermoplastic filaments having an average diameter in excess of about 10 microns wherein the proportion of the microfiber web to the combined outer webs is at least about 2 to 1 by weight.

4,436,781

CENTRIFUGALLY CAST POLE COMPRISED OF A REINFORCED RESIN FOR SUPPORTING A LIGHT OR THE LIKE UPON AN END THEREOF

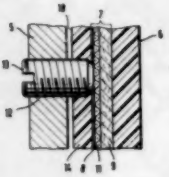
Bruno Rother, Neumarkt, and Hartmut Trommen, Postbauer-Heng, both of Fed. Rep. of Germany, assignors to G.A. Pfleiderer GmbH & Co., KG, Neumarkt, Fed. Rep. of Germany

Division of Ser. No. 229,410, Jan. 29, 1981, abandoned. This application Jul. 6, 1982, Ser. No. 395,230

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1980, 3032574

Int. Cl.³ B29C *5/04*; B32B *31/00*; E04C *3/30*; E04H *12/00*

U.S. Cl. 428—365 **7 Claims**



1. A reinforced synthetic resin tapered pole comprising an elongated tapered pole formed by centrifugally casting a synthetic resin reinforcement means embedded within said pole without protruding to the outer surface of said pole, said reinforcement means comprising an outer mat which is penetrable by said synthetic resin and which has a specific gravity slightly lower than the specific gravity of said synthetic resin such that during said centrifugal casting, the synthetic resin passes radially outwardly through said mat to form an outer radial layer of synthetic resin as said mat floats on said outer radial layer of synthetic resin due to the lower specific gravity of said synthetic resin, said reinforcement means further comprising fibrous material penetrable by said synthetic resin and disposed on the radial inner side of said mat, said reinforcement means maintaining said fibrous material within the walls of said pole and preventing said fibrous material from penetrating the outer surface of said pole, a wire cloth embedded within said pole between said mat and said fibrous material, said wire cloth extending along a portion of the longitudinal length of said pole, and an attachment member attached to said pole by attachment elements, said attachment elements penetrating said outer layer of synthetic resin to said wire cloth which provides a solid resistance to further penetration by said attachment elements, whereby a firm attachment of said attachment member to said pole is thereby achieved.

4,436,782

OLIGOMER PELLETS OF ETHYLENE TEREPHTHALATE

Chungfah H. Ho, Kinston, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 209,324, Nov. 24, 1980, Pat. No. 4,340,550. This application May 3, 1982, Ser. No. 374,155

Int. Cl.³ B32B *5/16, 9/00*; C08G *63/02*

U.S. Cl. 428—402 **1 Claim**

1. Free-flowing pellets of ethylene terephthalate oligomer of from about 0.08 to 0.15 intrinsic viscosity, said pellets being in the form of slightly flattened beads having a thickness of about 0.3 to 2.0 mm and a circular diameter of 0.8 to 4.0 mm, said

pellets having a bulk density of from about 37 to 50 pounds per cubic foot.

4,436,783

THERMOSENSITIVE RECORDING MATERIAL

Fumio Okumura, Kunitachi; Masahiro Higuchi, Tokyo; Shun Kamei, Kitamoto, and Masahiro Miyauchi, Tokyo, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Apr. 6, 1982, Ser. No. 366,086

Claims priority, application Japan, Apr. 11, 1981, 56-54848

Int. Cl.³ B41M *5/18*

U.S. Cl. 428—411 **14 Claims**

1. In a thermosensitive recording material containing essentially a bisphenol compound as color developer and a dye precursor which, upon being heated, forms color by reacting with said bisphenol compound, the improvement whereby the color generating characteristics of the thermosensitive recording material are ameliorated which comprises employing as the color developer a fused mixture of said bisphenol compound and one or more monohydroxy phenolic compounds.

4,436,784

PROCESS FOR PREPARING PLASTICIZED POLYVINYL CHLORIDE SUBSTRATES COMPRISING A MOISTURE-CURED POLYURETHANE COATING AND THE PRODUCTS RESULTING THEREFROM

Wendell A. Ehrhart, Hallam, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Feb. 25, 1982, Ser. No. 352,355

Int. Cl.³ B32B *27/40*

U.S. Cl. 428—423.1 **8 Claims**

5. A plasticized polyvinyl chloride substrate comprising a moisture-cured polyurethane coating, said coated substrate being obtained by

preparing a prepolymer composition comprising a moisture-curable polyurethane prepolymer and a plasticizer,

applying said prepolymer composition to a plasticized polyvinyl chloride substrate, and

heating and moisture-curing the coated substrate, whereby a substantial portion of the plasticizer in said coating migrates into said substrate.

4,436,785

SILVER-FILLED GLASS

Raymond L. Dietz, Poway; Michael Featherby, San Diego, and Peter K. Margetts, El Cajon, all of Calif., assignors to Johnson Matthey Inc., Malvern, Pa.

Division of Ser. No. 355,719, Mar. 8, 1982, Pat. No. 4,401,767, which is a continuation-in-part of Ser. No. 287,892, Aug. 3, 1981, abandoned. This application May 16, 1983, Ser. No. 494,873

Int. Cl.³ B32B *17/06*; B22F *7/02*; C03C *3/10*

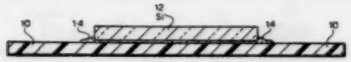
U.S. Cl. 428—427 **6 Claims**

1. An electronic assembly comprising:

a ceramic substrate;

a semiconductive device attached to said substrate by a bond;

said bond being a silver-filled glass consisting essentially of: 25 to 95% of silver powder; and



75 to 5% of a high-lead borosilicate substantially soduim-free glass having a softening temperature in the range of 325° to 425° C., and a coefficient of thermal expansion no higher than about 13 ppm/°C.

4,436,786

MAGNETIC RECORDING MEDIUM

Takehisa Ohkawa, Usuda, and Kunilchi Yoda, Saku, both of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1982, Ser. No. 364,056

Claims priority, application Japan, Apr. 1, 1981, 56-47313

Int. Cl.³ G11B 5/70

U.S. Cl. 428—447 **10 Claims**

1. A magnetic recording medium comprising a base material and a magnetic coating layer thereon, said magnetic coating layer containing a binder, a highly viscous silicone oil having a viscosity of at least 100,000 centistokes and a higher fatty acid having a melting point of at least 44° C., said silicone oil in an amount of about 0.2% to about 2.0% by weight of said binder and said higher fatty acid in an amount of about 0.5% to about 4.0% by weight of said binder.

4,436,787

DURABLE PRIMER COMPOSITION

Ryuzo Mikami, and Katsuyoshi Nakasuji, both of Ichihara, Japan, assignors to Dow Corning Corporation, Midland, Mich.

Filed Feb. 3, 1983, Ser. No. 463,379

Claims priority, application Japan, Feb. 19, 1982, 57-25551

Int. Cl.³ B32B 9/04

U.S. Cl. 428—447 **11 Claims**

1. A primer composition comprising

(A) 100 parts by weight of a silicone-modified epoxy resin which has both epoxy groups and silicone-bonded alkoxy radicals, said silicone-modified epoxy resins being the condensation reaction product between

(a) an alkoxy silicon compound being expressed by the average unit formula

$$R_aSiO_{\frac{4-a-b}{2}}(X_b)$$

wherein R represents a monovalent radical selected from the group consisting of hydrocarbon radicals and substituted hydrocarbon radicals having at lease one hydrogen atom substituted by a halogen atom, cyano, mercapto, hydroxyl, methacryloxy, acryloxy, glycidoxy, and 3,4-epoxycyclohexyl, X represents an alkoxy radical or an alkoxyalkoxy radical, a has a value from 0 to 2 inclusive, b has a value from 1 to 4 inclusive and the sum of a+b has a value from 1 to 4 inclusive,

(b) an epoxy resin having both epoxy groups and hydroxyl radicals in the molecules,

where (a) and (b) are present in amounts sufficient to satisfy the following relationship

$$\frac{\text{equivalent number of alkoxy radicals in } (a)}{\text{equivalent number of hydroxyl radicals in } (b)} \geq 1$$

(B) 10 to 100 parts by weight of an aminoxy organosilicon compound having per molecule at least one silicon-bonded aminoxy radical which is expressed by the formula

$$R_2^1NO\ Si\equiv$$

wherein R' represent hydrogen atom, a monovalent hydrocarbon radical, a halogenated monovalent hydrocarbon radical, or two radials represented by R^1 can be bonded together, and (C) 0.1 to 100 parts by weight of an organotitanate.

5. An article comprising a substrate having a surface coated with a dried film derived from the primer composition of claim 1.

7. An article in accord with claim 5 further comprising a cured room temperature vulcanizable silicone rubber bonded to the dried film where said cured rubber is cured while in contact with said dried film.

4,436,788

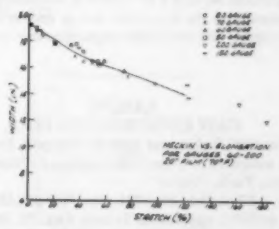
COMPOSITE STRETCH WRAP FILM

Barry A. Cooper, Wayzata, Minn., assignor to Bemis Company, Inc., Minneapolis, Minn.

Division of Ser. No. 119,192, Feb. 2, 1980. This application Dec. 1, 1982, Ser. No. 446,055

Int. Cl.³ B32B 27/06; C08L 23/16

U.S. Cl. 428—483 **12 Claims**



1. A composite film comprising:

a first layer comprising at least about 90% by weight of high molecular weight copolymer of ethylene and vinyl acetate containing between about 4 and about 25% by weight of repeating units derived from vinyl acetate and having a melt index of between about 0.1 and about 4.0 and a tackifier selected from the group consisting of a low molecular weight polyisobutene, polyterpenes, amorphous polypropylene and microcrystalline wax; and

a second layer lamellarly adhered to said first layer and comprising at least about 90% by weight of a linear low density polyethylene having a specific gravity of between about 0.917 and about 0.945.

4,436,789

POLYOXAZOLINE-MODIFIED, PAPER COATING

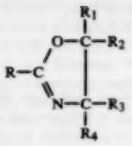
Roy A. Davis, and Norman L. Madison, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 28, 1980, Ser. No. 182,250

Int. Cl.³ C08L 79/02

U.S. Cl. 428—537 **8 Claims**

1. An improved fluid, paper coating composition having at least 40 weight percent solids in an aqueous dispersion which contains an opacifying amount of pigment, a binding amount of a binder and an alkaline pH modifying substance in an amount sufficient to produce a pH of at least about 7, wherein the improvement comprises at least about 0.005 percent based on the binder of a 2-oxazoline polymer having a molecular weight of from about 1,000 to about 150,000 as determined by gel permeation chromatography prepared from 2-oxazoline monomers of the formula



wherein R is alkyl, aralkyl, phenyl or inertly substituted phenyl and R_1–R_4 are each independently hydrogen, alkyl, aralkyl, phenyl or inertly substituted phenyl.

8. A paper coated by the process of claim 7.

4,436,790

GOLD-COLORED COIN MATERIAL

Bruno Prinz, Oberursel; Manfred B. Rockel, Friedrichsdorf; Günther Rudolph, Nueberg; Ulrich Heubner, Werdohl, and Hügo Zoebe, Altena, all of Fed. Rep. of Germany, assignors to Vereinigte Deutsch Metallwerke AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 22, 1982, Ser. No. 370,692

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1981, 3116125

Int. Cl.³ C22C *9/01, 9/02*

U.S. Cl. 428—675 6 Claims

1. A coin made of a copper base alloy consisting essentially of 1 to 7 percent tin and 1 to 7 percent aluminum and containing aluminum and tin in a total not in excess of 10 percent, balanced copper and inevitable impurities due to the manufacture.

4,436,791

CAST COLD ROLLING ROLL

Jacques Bocquet, Sedan, and Jean C. Werquin, Ronchin, both of France, assignors to Union Siderurgique du Nord et de l'Est de la France, Paris, France

Filed Oct. 29, 1981, Ser. No. 316,487

Claims priority, application France, Oct. 31, 1980, 80 23316

Int. Cl.³ C21D *9/38;* B21B *27/02*

U.S. Cl. 428—682 6 Claims

1. A cast bimetallic composite roll for cold rolling, comprising in combination a heart metal constituted by a nodular or lamellar cast iron and a case metal constituted by a steel having a chromium content of 8 to 16% and a carbon content of 0.65 to 0.95%, the ratio between the chromium and carbon being between 11 and 16 and the structure of the case metal being martensitic with a residual austenite content of less than 10% and a hardness exceeding 700 HV.

4,436,792

CONTAINER DEVICE FOR PLANAR BATTERY

Naoki Tomino, Tokyo; Osamu Ikeda, Kawasaki; Yoshio Matsuzawa, Tokyo, and Hideya Inoue, Kawasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 9, 1982, Ser. No. 440,423

Claims priority, application Japan, Nov. 12, 1981, 56-167658[U]; Nov. 27, 1981, 56-175316[U]; Nov. 27, 1981, 56-175317[U]; Dec. 4, 1981, 56-180654[U]

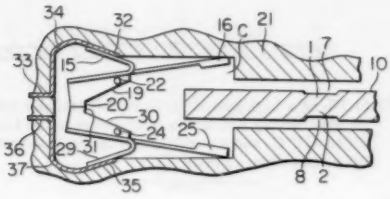
Int. Cl.³ H01M *2/10*

U.S. Cl. 429—1 14 Claims

1. A device capable of containing at least one planar battery having a positive electrode and a negative electrode and capable of supplying a power to a circuit when said battery has been completely contained, said device including:

(a) a plurality of terminals for contacting said positive electrode and said negative electrode, respectively, of said battery when completely contained;

(b) means for holding each of said plurality of terminals, said holding means holding at least one of said terminals movably between a first position and a second position, and wherein said movable terminal, when in said first position, contacts neither of said positive electrode and said negative electrode and, when in said second position, can contact one of said electrodes; and



(c) means for moving said movable terminal to said second position in response to the containment of said battery.

4,436,793

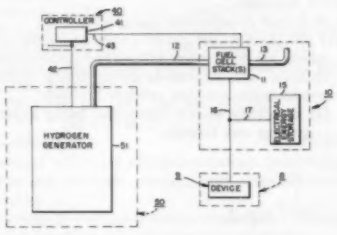
CONTROL SYSTEM FOR HYDROGEN GENERATORS

Otto J. Adlhart, Tenafly, N.J., assignor to Engelhard Corporation, Iselin, N.J.

Filed Sep. 29, 1982, Ser. No. 426,324

Int. Cl.³ H01M *8/06*

U.S. Cl. 429—17 27 Claims



1. A system for controlling the generation of hydrogen upon demand comprising:

(a) a hydrogen generator means of the type which relies at least partially on the process of anodic corrosion to generate hydrogen having an anode, a cathode and an aqueous electrolyte therebetween and a circuit means for enabling electrical circuit to pass between the anode and cathode in addition to the electrolyte,

(b) a hydrogen consuming device for receiving and utilizing hydrogen produced by the hydrogen generator means, and

(c) a controller means for regulating the passage of current through the circuit means in response to demand for hydrogen by the consuming device

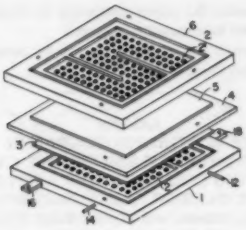
whereby hydrogen is automatically generated and provided to the consuming device only as required by the consuming device.

4,436,794

MOLTEN CARBONATE FUEL CELL

Masato Takeuchi, Katsuta; Hideo Okada, Hitachi; Hiroshi Tobita, Kitaibaraki; Sigeru Okabe, Hitachi; Shinpei Matsuda, Ibaraki; Munehiko Tonami; Kohki Tamura, and Fumito Nakajima, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 26, 1982, Ser. No. 362,056
Claims priority, application Japan, Mar. 31, 1981, 56-46453
Int. Cl.³ H01M 4/90, 8/14
U.S. Cl. 429—40 15 Claims



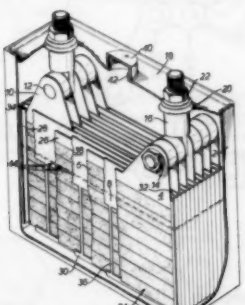
1. In a molten carbonate fuel cell comprising an anode, a cathode and an alkali metal-carbonate electrolyte placed between both the electrodes and operated by supplying a fuel into a fuel chamber placed in the anode side and an oxidant into an oxidant chamber placed in the cathode side, the improvement wherein at least one of said electrodes contains nickel oxide and/or cobalt oxide, together with at least one rare earth element oxide.

4,436,795

ALKALINE ELECTRIC STORAGE CELLS

Michael J. Cooper, Redditch, and James Parker, Alvechurch, all of England, assignors to Chloride Group Public Limited Company, London, England

Filed Jul. 14, 1982, Ser. No. 398,433
Claims priority, application United Kingdom, Jul. 17, 1981, 8122088
Int. Cl.³ H01M 10/32
U.S. Cl. 429—53 14 Claims



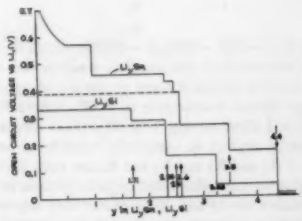
1. An electric storage cell of alkaline type, said cell comprising:
(a) a container;
(b) a plurality of alternate positive and negative electrodes disposed in said container, said positive and negative electrodes being conceptually divisible into upper and lower portions;
(c) first separator means which separate the lower portions of adjacent electrodes and which leave a substantially unobstructed electrical path between said adjacent electrodes;
(d) second separator means which separate the upper portions of adjacent electrodes, said second separator means comprising gas permeable absorbent material capable of conducting electrolyte by capillary action; and
(e) a free electrolyte contained in said container and having a normal level which is above the bottoms of said second separator means and below the tops of said negative electrodes,
whereby the lower portions of adjacent positive and negative electrodes are below the normal electrolyte level and operate electrochemically in the conventional manner and the upper portions of adjacent positive and negative electrodes are above the normal electrolyte level but kept moist with electrolyte by said second separator means and thus also operate electro-chemically in the conventional manner.

4,436,796

ALL-SOLID ELECTRODES WITH MIXED CONDUCTOR MATRIX

Robert A. Huggins, Stanford, Calif., and Bernard A. Boukamp, Achterste Kamp, Netherlands, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 30, 1981, Ser. No. 288,563
Int. Cl.³ H01M 4/40
U.S. Cl. 429—112 26 Claims



1. An electrochemical cell comprising:
a positive electrode, a negative electrode, and an electrolyte, said positive or negative electrode having an all-solid, composite microinstructural morphology and including therein both a reactant phase and a mixed-conducting matrix phase.

4,436,797

X-RAY MASK

Michael J. Brady, Brewster; Bernard S. Meyerson, Yorktown Heights, both of N.Y., and John M. Warlaumont, Ridgewood, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1982, Ser. No. 394,018
Int. Cl.³ F24F 13/00; B05B 5/00; C23C 15/00; B32B 9/00
U.S. Cl. 430—5 20 Claims

1. An X-ray mask comprising an X-ray absorbing pattern supported by a foil of hydrogenated amorphous carbon having an optical bandgap of at least one electron volt.

11. An X-ray mask comprising a substantially X-ray absorbing patterned layer supported by a substantially X-ray trans-

parent foil, said foil comprising hydrogenated amorphous carbon and having an optical bandgap of at least one electron volt, and further comprising a frame supporting said X-ray transparent foil, said frame comprising silicon.

4,436,798

METHOD OF TREATING A DYE IMAGE

Christopher D. Shennan, Brentwood, and Michael W. Fry, Ilford, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

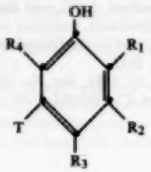
Filed Jun. 28, 1982, Ser. No. 392,442

Claims priority, application United Kingdom, Aug. 13, 1981, 8124741

Int. Cl.³ G03C 3/00, 5/24

U.S. Cl. 430—17 15 Claims

1. A method of treating a dye image in photographic material which dye image has been formed by the colour coupling reaction of a primary aromatic amine colour developing agent with a phenolic colour coupler of the formula



(I)

where T is —OH, —NH_2 or —NHR_5 where R_5 is alkyl or aryl, one of R_1 and R_3 is the coupling position and if it is the coupling position the substituent group is hydrogen or halogen, a nitrogen-linked heterocycle or —SR_6 where R_6 is optionally substituted alkyl having 1 to 20 carbon atoms or optionally substituted aryl or an optionally substituted heterocycle, the other of R_1 and R_3 and R_2 and R_4 are each hydrogen or halogen or optionally substituted organic groups, or one of R_1 and R_2 together or R_2 and R_3 together may represent the atoms necessary to complete an optionally substituted benzannelated ring, which treatment method comprises treating the dye image with an aqueous solution which comprises a salt of a metal selected from the group consisting of manganese, iron, nickel, cobalt, copper, zinc, cadmium, lead, aluminium, vanadium, chromium or titanium transition (b-sub group) metal, or a metal of the third or fourth main group of the periodic table of the elements, the concentration of the metal ion in the aqueous solution being at least 10^{-4}M.

15. The photographic dye image obtained by the method according to claim 1.

4,436,799

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE MAGENTA DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

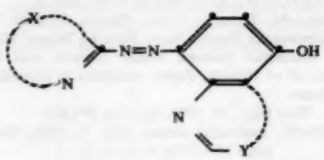
Steven Evans, Rochester, and James K. Elwood, Victor, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 458,499, Jan. 17, 1983, which is a continuation-in-part of Ser. No. 380,843, May 21, 1982, abandoned. This application Jun. 15, 1983, Ser. No. 504,631

Int. Cl.³ G03C 1/40; C09B 45/00

U.S. Cl. 430—17 12 Claims

7. A photographic element comprising a support having thereon a coordination complex of a polyvalent metal ion and a compound having the formula:



wherein:

(a) X represents the atoms necessary to complete a 5- or 6-membered heterocyclic ring, and

(b) Y represents the atoms necessary to complete a 5- or 6-membered fused ring.

4,436,800

MULTILAYER ELECTROPHOTOGRAPHIC ELEMENT CONTAINING A TRISAZO CHARGE CARRIER GENERATING SUBSTANCE AND A HYDRAZONE CHARGE CARRIER TRANSFER SUBSTANCE

Masafumi Ohta, Susono, and Kiyoshi Sakai, Numazu, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

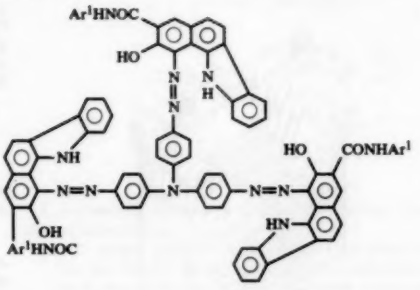
Filed May 19, 1982, Ser. No. 379,686

Claims priority, application Japan, May 28, 1981, 56-80152; May 28, 1981, 56-80153; May 28, 1981, 56-80154; May 28, 1981, 56-80155; May 28, 1981, 56-80162; May 28, 1981, 56-80163; May 28, 1981, 56-80164; May 28, 1981, 56-80165; May 29, 1981, 56-82235; May 29, 1981, 56-82236; May 29, 1981, 56-82237; May 29, 1981, 56-82238; Jun. 10, 1981, 56-88103; Jun. 10, 1981, 56-88104; Jun. 10, 1981, 56-88105; Jun. 10, 1981, 56-88106; Jun. 10, 1981, 56-88112; Jun. 10, 1981, 56-88113; Jun. 12, 1981, 56-90612; Jun. 12, 1981, 56-90613; Jun. 12, 1981, 56-90614; Jan. 6, 1982, 57-475; Jan. 18, 1982, 57-5683; Jan. 18, 1982, 57-5684; Jan. 18, 1982, 57-5688

Int. Cl.³ G03G 5/06

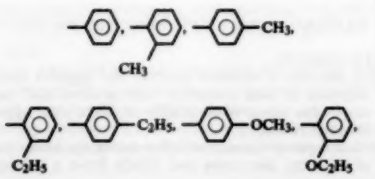
U.S. Cl. 430—59 16 Claims

1. An electrophotographic element comprising an electrically conductive substrate, a charge carrier generating layer and a charge transfer layer superimposed on said substrate, wherein said charge carrier generating layer contains a trisazo compound having the general formula (I):



(I)

wherein, Ar^1 represents



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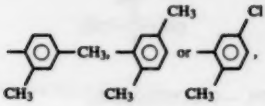
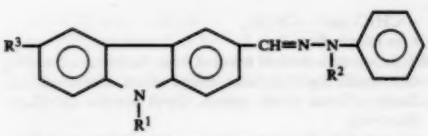
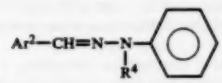


and said charge transfer layer contains a hydrazone compound having the general formula (II), (III), (IV) or (V):



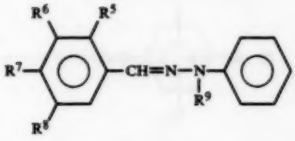
(II)

wherein, R^1 represents a methyl group, an ethyl group, a 2-hydroxyethyl group or a 2-chloroethyl group, R^2 represents a methyl group, an ethyl group, a benzyl group or a phenyl group, and R^3 represents hydrogen, chlorine, bromine, an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, a dialkylamino group or a nitro group,



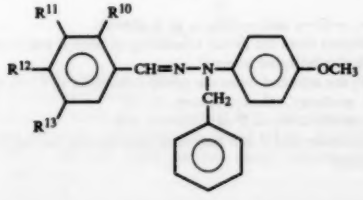
(III)

wherein Ar^2 represents a naphthalene ring, a substituted naphthalene ring, an anthracene ring, a substituted anthracene ring, a styryl group, a substituted styryl group, a pyridine ring, a furan ring or a thiophene ring, and R^4 represents an alkyl group or a benzyl group,



(IV)

wherein, R^5, R^6, R^7 and R^8 each represents hydrogen, an alkyl group having 1 to 3 carbon atoms, an alkoxy group having 1 to 3 carbon atoms, a dialkylamino group or a dibenzylamino group, and R^9 represents an alkyl group or a benzyl group,



(V)

wherein, R^{10}, R^{11}, R^{12}, and R^{13} each represents hydrogen, an alkyl group having 1 to 3 carbon atoms, an alkoxy group having 1 to 3 carbon atoms, a substituted or non-substituted dialkylamino group, a dibenzylamino group or a halogen atom, and a binder.

4,436,801

ELECTROPHOTOGRAPHIC RECORDING ELEMENT HAVING AN ANILINE SULPHONEPHTHELEIN CHARGE GENERATOR

Franco Knirsch, Banchette, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Dec. 20, 1982, Ser. No. 451,387
Claims priority, application Italy, Dec. 21, 1981, 68649 A/81
Int. Cl.³ G03G 5/06, 5/14
U.S. Cl. 430—73 **11 Claims**

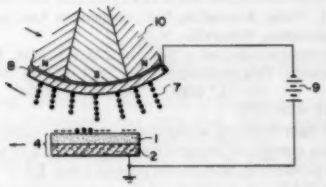
1. An electrophotographic recording element comprising an electrically conducting support, and a film of photoconductor material containing an electric charge generator compound, said charge generator compound comprising a sulphonephthalein derivative in which at least one phenyl ring comprises a substituted amino group in which at least one substituent is an aromatic or heterocyclic ring.

4,436,802

REVERSAL ELECTROPHOTOGRAPHY DEVELOPING METHOD

Shuichi Ohtsuka, and Yasuo Aotsuka, both of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1982, Ser. No. 446,273
Claims priority, application Japan, Dec. 7, 1981, 56-196627
Int. Cl.³ G03G 13/09
U.S. Cl. 430—100 **3 Claims**



1. In electrophotography in which an electrophotosensitive material is electrostatically charged to its "saturation charging potential"; is exposed to an image to be reproduced to form an electrostatic latent image; and finally is subjected to a magnetic brush, reversal development with a one-component magnetic toner at a bias potential of the same polarity as the potential appearing on the electrostatically charged material, an improved developing method characterized in that it uses a one-component magnetic toner having a resistivity of 10^7 or more ohm.centimeter within the range of electric charge induction of inter-toner particles and a coercive force of 150 or more oersteds.

4,436,803

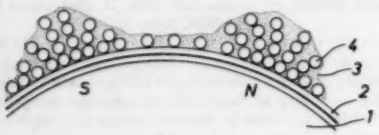
METHOD OF DEVELOPING ELECTROSTATIC IMAGE WITH MAGNETIC BRUSH EAR PROMOTER

Toshimitsu Ikeda, Himeji; Nobuyasu Honda, Tenri, and Tetsuya Nakano, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Mar. 23, 1982, Ser. No. 360,938
Claims priority, application Japan, Mar. 23, 1981, 56-40424
Int. Cl.³ G03G 9/14, 13/09
U.S. Cl. 430—122 **9 Claims**

1. A method of developing an electrostatic image by bringing an electrostatic image-carrying surface of a substrate into sliding contact with a magnetic brush of a developer formed on a developer-feeding sleeve having a magnet arranged in the interior thereof, wherein the magnetic brush is formed from (A) an earing-promoting component comprising particles of a dispersion of a powder of a magnetic material in a resin, which have a relatively large diameter of 70 to 300 microns, the magnetic material being present in an amount of 30 to 80% by

weight based on the total weight of the resin and the magnetic material and (B) a developer component comprising particles of a dispersion of a powder of a magnetic material in a binder medium, which have a relatively small diameter of 5 to 50 microns, the magnetic material being present in the developer



component in an amount of 40 to 75% by weight based on the total weight of the resin and the magnetic material, and the ratio of the earing-promoting component to the developer component being within the range of 80:20 to 10:90, and wherein the electrostatic image is developed only by the developer component.

4,436,804

LIGHT-SENSITIVE POLYMERIC DIAZONIUM CONDENSATES AND REPRODUCTION COMPOSITIONS AND MATERIALS THEREWITH

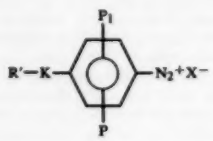
John E. Walls, Annandale, N.J., assignor to American Hoechst Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 245,837, Mar. 20, 1981, abandoned. This application Mar. 18, 1982, Ser. No. 359,335

Int. Cl.[3] **G03C** *1/54;* **C07C** *113/04*

U.S. Cl. 430—157 **27 Claims**

1. A light sensitive, substantially linear polymeric diazonium reaction compound comprising repeating units of the condensation product of each of the general types E^+X^- and Q, in which E^+X^- is a radical of the compound of the general formula:



wherein:

—K— is selected from the group consisting of

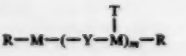
—S—, —O—, and —CH_2—, or is absent;

R' is selected from the group consisting of phenyl and C_1 to C_4 alkyl substituted phenyl;

P and P_1 are selected from the group consisting of C_1 to C_4 alkyl, methoxy, ethoxy, butoxy, or H;

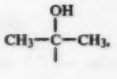
P_1 may be the same as P or different; and

X^- is an anion; and is a radical of an oligomer having the structure:

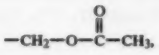


wherein:

R is selected from the group consisting of



—CH_2OH, —$CH_2O(CH_2)_nCH_3$,



—CH_2Cl and —CH_2Br;

n is an integer from 0 to 3;

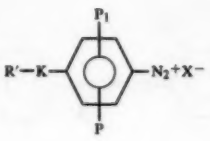
M is an aromatic radical selected from the group consisting of aromatic hydrocarbons, diaryl ethers, diaryl sulfides, diaryl sulfones, diaryl amines, diaryl ketones and diaryl diketones;

m is 1 to 6; Y is selected from the group consisting of —CH_2— or —CH_2—O—CH_2—bridge; and

T is the same as R when Y=—CH_2— and H— when Y=—CH_2—O—CH_2—;

wherein said diazonium compound is prepared by a two-step process consisting essentially of forming a precondensed oligomer component Q and reacting said component Q with radical E^+X^- such that the ratio of M to E^+X^- is at least 2:1; whereby said diazonium compound is capable of being substantially insolubilized when it is coated on a suitable substrate and exposed to a suitable light source at an energy level of 4 mJ/cm^2.

19. A photosensitive composition comprising a light sensitive component wherein said light sensitive component consists essentially of a light sensitive, substantially linear polymeric diazonium reaction compound having repeating units of the condensation product of each of the general types E^+X^- and Q, in which E^+X^- is a radical of the compound of the general formula:



wherein:

—K— is selected from the group consisting of

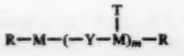
—S—, —O—, and —CH_2—, or is absent;

R' is selected from the group consisting of phenyl and C_1 to C_4 alkyl substituted phenyl;

P and P_1 are selected from the group consisting of C_1 to C_4 alkyl, methoxy, ethoxy, butoxy, or H;

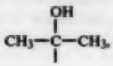
P_1 may be the same as P or different; and

X^- is an anion; and Q is a radical of an oligomer having the structure:

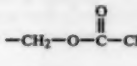


wherein:

R is selected from the group consisting of



$-CH_2OH$, $-CH_2O(CH_2)_nCH_3$,



$-CH_2Cl$ and $-CH_2Br$;

n is an integer from 0 to 3;

M is an aromatic radical selected from the group consisting of aromatic hydrocarbons, diaryl ethers, diaryl sulfides, diaryl sulfones, diaryl amines, diaryl ketones and diaryl diketones;

m is 1 to 6;

Y is selected from the group consisting of $-CH_2-$ or $-CH_2-O-CH_2-$bridge; and

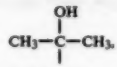
T is the same as R when Y=$-CH_2-$ and H— when Y=$-CH_2-O-CH_2-$;

wherein said diazonium compound is prepared by a two-step process consisting essentially of forming a precondensed oligomer component Q and reacting said component Q with radical E^+X^- such that the ratio of M to E^+X^- is at least 2:1; whereby said diazonium compound is capable of being substantially insolubilized when it is coated on a suitable substrate and exposed to a suitable light source at an energy level of 4 mJ/cm^2.

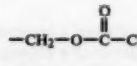
24. A process for the preparation of a light sensitive, substantially linear polymeric diazonium reaction compound consisting essentially of forming a condensed oligomer component Q having the structure

wherein:

R is selected from the group consisting of



$-CH_2OH$, $-CH_2O(CH_2)_nCH_3$,



$-CH_2Cl$ and $-CH_2Br$;

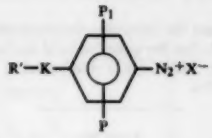
n is an integer from 0 to 3;

M is an aromatic radical selected from the group consisting of aromatic hydrocarbons, diaryl ethers, diaryl sulfides, diaryl sulfones, diaryl amines, diaryl ketones and diaryl diketones;

m is 1 to 6;

Y is selected from the group consisting of $-CH_2-$ or $-CH_2-O-CH_2-$bridge; and

T is the same as R when Y=$-CH_2-$ and H— when Y=$-CH_2-O-CH_2-$; and then reacting said component Q with a component E^+X^- having the structure



wherein:

—K— is selected from the group consisting of

—S—, —O—, and $-CH_2-$, or is absent;

R′ is selected from the group consisting of phenyl and C_1 to C_4 alkyl substituted phenyl;

P and P_1 are selected from the group consisting of C_1 to C_4 alkyl, methoxy, ethoxy, butoxy, or H;

P_1 may be the same as P or different; and

X^- is an anion;

such that the ratio of M to E^+X^- is at least 2:1, thereby forming a reaction compound having repeating Q and E^+X^- groups which reaction compound is capable of being substantially insolubilized when it is coated on a suitable substrate and exposed to a suitable light source at an energy level of 4 mJ/cm^2.

4,436,805

SILVER COMPLEX DIFFUSION TRANSFER PROCESS USING TWO TONING AGENTS

Shigeru Iguchi, and Seigo Ebato, both of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 423,723

Claims priority, application Japan, Oct. 26, 1981, 56-171138

Int. Cl.³ G03C *5/54, 1/10, 1/40*

U.S. Cl. 430—248 **8 Claims**

1. A silver complex diffusion transfer process which comprises the steps of:

(1) exposing a silver halide emulsion layer,

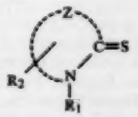
(2) developing the emulsion layer with an alkaline solution in the presence of a silver halide developing agent and a silver halide solvent to form a diffusible silver complex, and then

(3) transferring the diffusible silver complex onto an image receiving layer to form a silver image,

wherein said alkaline solution contains an alkali-soluble iodide and a nitrogen-containing heterocyclic compound represented by the following general formula (I) or (II):

(I)

(II)



in which R represents an alkyl group of at least 4 carbon atoms, an aryl group or a group containing both the alkyl and aryl groups, R_1 and R_2 represent a hydrogen atom or a substituent and at least one of R_1 and R_2 represents an alkyl group of at least 4 carbon atoms, an aryl group or a group containing both the alkyl and aryl

groups, and Z represents a 5- or 6-membered heterocyclic ring

the iodine and the heterocyclic compound present in an amount such that the molar ratio of the iodide in terms of iodine to the heterocyclic compound is in the range of from 1:5 to 5:1.

4,436,806

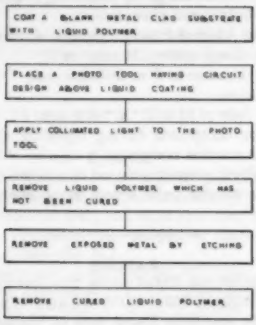
METHOD AND APPARATUS FOR MAKING PRINTED CIRCUIT BOARDS

Francis J. Rendulic, Sudbury; Robert K. Trasavage, Whitinsville, both of Mass., and Paul A. Boduch, Lakewood, Colo., assignors to W. R. Grace & Co., Cambridge, Mass.

Continuation-in-part of Ser. No. 225,810, Jan. 16, 1981, abandoned. This application Feb. 22, 1982, Ser. No. 350,777

Int. Cl.³ G03C 5/00

U.S. Cl. 430—311 **38 Claims**


COAT A BLANK METAL CLAD SUBSTRATE WITH LIQUID POLYMER
PLACE A PHOTO TOOL HAVING CIRCUIT DESIGN ABOVE LIQUID COATING
APPLY COLLIMATED LIGHT TO THE PHOTO TOOL
REMOVE LIQUID POLYMER WHICH HAS NOT BEEN CURED
REMOVE EXPOSED METAL BY ETCHING
REMOVE CURED LIQUID POLYMER

1. A process for making a resist pattern on circuit boards comprising:

(a) providing a circuit board substrate;

(b) coating at least a portion of said substrate with a liquid polymer composition curable to a solid by means of non-coherent collimated light radiation;

(c) projecting a pattern of substantially collimated non-coherent light radiation patterned by patterning means out of contact with said liquid polymer coating;

(d) exposing said coating of liquid polymer composition to said projected pattern of substantially collimated non-coherent light radiation and curing the polymer composition to a solid polymer in said pattern of substantially collimated non-coherent light and maintaining said liquid polymer a substantially uncured liquid polymer outside of said pattern of substantially collimated non-coherent light; and

(e) removing said substantially uncured liquid polymer leaving said solid polymer in said pattern on said circuit board substrate.

4,436,807

DEVELOPER COMPOSITION WITH SODIUM, LITHIUM AND/OR POTASSIUM SALTS FOR DEVELOPING NEGATIVE WORKING IMAGED PHOTOGRAPHIC MATERIAL

John E. Walls, Wiesbaden Biebrich, Fed. Rep. of Germany, assignor to American Hoechst Corporation, Somerville, N.J.

Filed Jul. 15, 1982, Ser. No. 398,509

Int. Cl.³ G03C 5/24, 5/34; G03F 7/00

U.S. Cl. 430—331 **8 Claims**

1. A developing composition capable of removing the unexposed non-image areas of an imagewise exposed negative working photographic element which comprises an aqueous solution having a pH of from about 8 to 12 of

(a) a sodium, potassium or lithium salt of octyl, decyl or dodecyl monosulfate which is present in an amount of from about 0.05% to about 10%, and

(b) a sodium, lithium, potassium or ammonium metasilicate salt which is present in an amount of from about 0.001% to about 5.0%, and

(c) a lithium, potassium, sodium or ammonium borate salt which is present in an amount of from about 0.1% to about 15%, and

(d) one or more compounds selected from the group consisting of oxalic, malonic, succinic, glutaric and adipic acids or a lithium, potassium, sodium or ammonium salt thereof which is present in an amount of from about 0.01% to about 5%, and

(e) di- and/or tri-sodium or -potassium phosphate which is present in an amount of from about 0.5% to about 12%, and

wherein both sodium and potassium compounds must be present in said composition and the ratio of sodium to potassium ranges from about 1:1 to about 1.4:2, and wherein said percentages are by weight of the solid parts of said composition.

4,436,808

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Morio Yagihara; Tsumoru Hirano, and Keiji Mihayashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

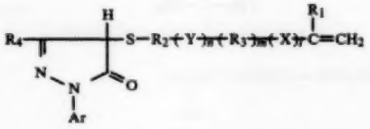
Filed Feb. 25, 1983, Ser. No. 469,660

Claims priority, application Japan, Feb. 25, 1982, 57-29683

Int. Cl.³ G03C 7/16, 5/24

U.S. Cl. 430—381 **19 Claims**

19. A method of forming a color image comprising developing an imagewise exposed silver halide color photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer containing a magenta color image forming polymer coupler latex which is capable of forming a dye upon coupling with an oxidation product of an aromatic primary amine developing agent and which is a homopolymer or copolymer having a repeating unit derived from a monomer coupler represented by the following general formula (I):



(I)

wherein R_1 represents hydrogen, a lower alkyl group containing from 1 to 4 carbon atoms or a chlorine atom; R_2 and R_3, which may be the same or different, each represents an unsubstituted or substituted alkylene group which may be a straight chain or a branched chain, an unsubstituted or substituted arylene group or an unsubstituted or substituted aralkylene group; X represents —CONH— or —COO—; Y represents —O—, —S—, —SO—, —SO_2—, —CONH— or —COO—; Ar represents an unsubstituted or substituted phenyl group; R_4 represents an unsubstituted or substituted anilino group, an unsubstituted or substituted acylamino group or an unsubstituted or substituted ureido group; l represents 0 or 1; m represents 0 or 1; and n represents 0 or 1; wherein said developing is conducted using an alkaline aqueous solution containing an aromatic primary amine developing agent.

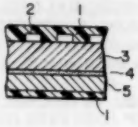
4,436,809
METHOD FOR LIGHT-SHIELDING A ROLL PHOTOGRAPHIC FILM

Mutsuo Akao, and Tadashi Kawata, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 141,533, Apr. 18, 1979, abandoned. This application Nov. 6, 1981, Ser. No. 318,894

Int. Cl.³ G03C 3/02; B32B 7/02

U.S. Cl. 430—501 16 Claims



1. In a method for light-shielding a roll photographic film comprising overlaying a backing paper on the roll photographic film and winding together said roll photographic film and backing paper, with the backing paper being located exterior to the roll film, the improvement which comprises the backing paper comprising a support; a print layer and at least one aluminum layer provided on the support, said backing paper being 50μ to 150μ in total thickness.

4,436,810
COLOR-PHOTOGRAPHIC RECORDING MATERIAL CONTAINING NON-DIFFUSING ELECTRON DONOR PRECURSOR COMPOUNDS

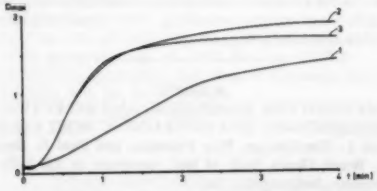
Karl Küffner, Unterhaching; Paul Marx, Leverkusen, and Wolfgang Lässig, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 29, 1983, Ser. No. 490,128

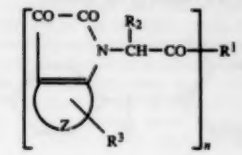
Claims priority, application Fed. Rep. of Germany, May 12, 1982, 3217877

Int. Cl.³ G03C 1/10, 1/40, 5/24, 7/26

U.S. Cl. 430—551 3 Claims



1. A color-photographic recording material comprising at least one photosensitive silver halide emulsion layer and a non-diffusing color-providing compound associated with this layer, which material contains, in at least one photosensitive silver halide emulsion layer or in a non-photosensitive binder layer, a non-diffusing electron donor precursor compound (ED precursor compound), from which a non-diffusing ED compound is formed under alkaline development conditions, wherein the improvement comprises the ED precursor compound corresponds to the following formula I:



I

wherein

Z represents a radical which completes a condensed aromatic ring system;

R^1 represents an n-valent aliphatic or aromatic radical;

R^2 represents H, alkyl or aryl,

R^3 represents one or more radicals to control the diffusion properties and the activation pH;

and

n represents 1 or 2.

4,436,811
PHOTOGRAPHIC MATERIAL

Mario Fryberg, Praroman-le-Mouret, and Viktor Weiss, Fribourg, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

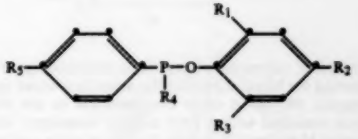
Filed Jun. 22, 1982, Ser. No. 391,091

Claims priority, application Switzerland, Jul. 10, 1981, 4545/81

Int. Cl.³ G03C 1/08, 1/10

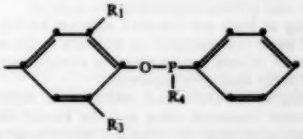
U.S. Cl. 430—564 11 Claims

1. A photographic recording material which contains at least one development accelerator in at least one silver halide emulsion layer or in a colloid layer adjacent to this layer, wherein the development accelerator is of the formula

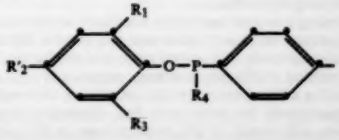


(I)

in which R_1, R_2 and R_3 independently of one another are hydrogen, alkyl having 1 to 16 carbon atoms each or substituted or unsubstituted alkoxy having 1 to 18 carbon atoms each and R_2 additionally represents a radical of the formula

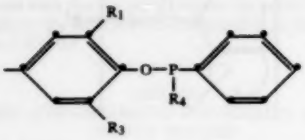


in which R_1 and R_3 have the abovementioned meaning, R_4 is unsubstituted or substituted phenoxy or unsubstituted or substituted amino and R_5 is a radical of the formula



in which R_1, R_3 and R_4 have the abovementioned meanings

and R_2' has the same meanings as R_1 and R_3 or R_5 represents hydrogen when R_2 is a radical of the formula



4,436,812

PROCESS OF CALIBRATING A BLOOD SUGAR ANALYZING APPARATUS

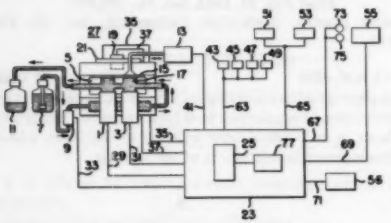
Koichi Endoh, Tokyo; Nobuhiko Tsuji; Keijiroh Nakamura, both of Yokosuka; Toshiyoshi Hamada, and Keiichi Ishida, both of Tokyo, all of Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Oct. 21, 1981, Ser. No. 313,665

Claims priority, application Japan, Oct. 29, 1980, 55-150753; Oct. 29, 1980, 55-150754; Oct. 29, 1980, 55-150755; Nov. 21, 1980, 55-163333; Dec. 9, 1980, 55-172664

Int. Cl.³ G01N *33/66, 35/00*

U.S. Cl. 435—14 **8 Claims**



1. A process of calibrating a blood sugar analyzing apparatus and measuring the blood sugar concentration in a blood specimen, wherein, the blood sugar concentration in the blood specimen is measured with a fixed enzyme membrane sensor and corrected by calibration means, said blood sugar analyzing apparatus providing a linear relationship between measured and actual blood sugar concentrations in a first range of blood sugar concentrations which are lower than a predetermined blood sugar concentration, and producing a deviation from said linear relationship in a second range of blood sugar concentrations higher than said predetermined blood sugar concentration, said process comprising the steps of:

measuring at least one standard solution having a known blood sugar concentration in said first range and storing the result of said measurement in storage means in said blood sugar analyzing apparatus,

calculating a first correction coefficient in dependence on the stored measured value and the known blood sugar concentration from the reference blood sugar concentration in said first range, and storing said first correction coefficient in storage means,

measuring at least one standard solution having a known concentration in said second range and storing the result of said measurement in storage means in said blood sugar analyzing apparatus,

calculating a second correction coefficent in dependence on the stored measured value and the known blood sugar concentration in said second range and storing said second correction coefficient in storage means, and

measuring a blood specimen and calculating the result of the measurement by using said first correction coefficient when said result of the measurement is less than said predetermined blood sugar concentration and by using said second correction coefficient when the result of the measurement exceeds said predetermined blood sugar concentration to thereby obtain a more accurate value of the blood sugar concentration in the blood specimen over the entire range of blood sugar concentration values than by using only one correction coefficient over the entire range of blood sugar concentration values.

4,436,813

IMMOBILIZED MICROBIAL CELL COMPOSITION FOR MAKING L-ASPARTIC ACID

Louis L. Wood, Rockville, and Gary J. Calton, Elkridge, both of Md., assignors to Purification Engineering, Inc., Columbia, Md.

Filed Mar. 16, 1982, Ser. No. 358,784

Int. Cl.³ C12P *13/20;* **C12N** *11/12, 11/08, 11/04*

U.S. Cl. 435—109 **11 Claims**

4. A composition comprising immobilized *E. coli* cells having L-aspartase activity, the cells being immobilized by means of an insoluble, crosslinked polymer obtained by curing a curable polyazetidine prepolymer, said prepolymer being cured at a temperature below the temperature at which the L-aspartase activity of the microbial cells is significantly reduced, the cell/crosslinked polymer composition constituting a coating on a solid inert carrier.

4,436,814

METHOD FOR THE RECOVERY OF ENZYMES AFTER THE TREATMENT OF STARCH-CONTAINING RAW MATERIALS USED FOR THE PRODUCTION OF FERMENTATION ALCOHOL

Hans Müller, Erlenbach; Hans-Peter Knöpfel; Felix Müller, both of Stäfa, all of Switzerland, and Rolf H. Kretz, Singen, Fed. Rep. of Germany, assignors to PEC Process Engineering Company, Männedorf, Switzerland

Filed Nov. 30, 1981, Ser. No. 325,819

Claims priority, application Switzerland, Dec. 2, 1980, 8893/80

Int. Cl.³ C12P *19/20, 19/14, 7/14;* **C12N** *9/28*

U.S. Cl. 435—162 **4 Claims**

1. In the method of treating starch-containing raw materials for the production of fermentation alcohol, by, in order, the steps of enzymatically degrading said starch-containing raw materials, separating solids from said raw materials, thereby, providing a liquid phase and a first solids phase in the form of a filter cake, subjecting said liquid phase to a fermentation for the production of ethanol, suspending said solids phase in water, separating solids from said solids phase suspended in water, thereby providing an enzyme-containing wash water phase and a second solids phase, and collecting said second solids phase for further working-up, the improvement comprising leading said enzyme-containing wash water back into said step of enzymatically degrading.

4,436,815

METHOD FOR STABILIZING AND SELECTING RECOMBINANT DNA CONTAINING HOST CELLS

Charles L. Hershberger, New Palestine, and Paul R. Rosteck, Jr., Beech Grove, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 27, 1981, Ser. No. 325,511

Int. Cl.³ C12N *15/00, 1/20, 1/00;* **C12P** *21/00, 21/02;* **C07H** *21/04*

U.S. Cl. 435—172 **27 Claims**

1. In the method for stabilizing and selecting host cells containing recombinant DNA in which host cells are transformed with a recombinant DNA cloning vector which contains both the ~2.5 kb BglII cI repressor-containing restriction fragment of bacteriophage λ and a gene which expresses a functional polypeptide, and in which the transformed host cells are lysogenized with a lysogenic organism containing a marker which is lethal or conditionally lethal in the host cells but which is

repressed in the transformed host cell by the repressor gene contained in the recombinant DNA cloning vector, an improvement wherein the improvement comprises:

transforming the host cells with a recombinant DNA cloning vector comprising

(a) the PstI-HincII cI repressor-containing restriction fragment of bacteriophage λ; and

(b) a gene which expresses a functional polypeptide;

subject to the limitation that the host cells are *E. coli*, the lysogenic organism is bacteriophage λ and the recombinant DNA cloning vector contains a replicon and a promoter which are not sensitive to the repressor, and subject to the further limitation, that when the transformed host cells are lysogenized with a lysogenic organism containing a gene which is conditionally lethal, the resulting host cells are cultured under restrictive conditions.

4,436,816

CELL GROWTH PROMOTING MATERIAL

Stephen K. Dinka, Washington Crossing, Pa., assignor to Pitman-Moore, Inc., Washington Crossing, N.J.

Filed Jan. 22, 1982, Ser. No. 342,026

Int. Cl.³ C12N *5/00, 1/38;* A61K *35/14*

U.S. Cl. 435—240 **7 Claims**

1. A process for preparing growth promoting material, whose effectiveness can be demonstrated by in vitro cell culture experiments, which comprises:

(a) slowly contacting serum or plasma with sufficient chilled perchloric acid to reach a 0.1 to 0.25 final molar concentration of said perchloric acid in said serum or plasma,

(b) at a temperature of −1° C. to 15° C.,

(c) under intensive mixing which is continued until a homogeneous suspension is obtained,

(d) separating the resultant precipitate, which contains the growth-promoting substances, from the supernatant,

(e) eluting said growth-promoting substances from said precipitate by first resuspending said precipitate in an aqueous alkaline or salt solution, and thereafter,

(f) adjusting the pH to solubilize the growth-promoting substances from the insoluble proteins,

(g) separating the supernatant, which contains the growth-promoting substances, from the insoluble, undesired precipitate,

(h) exchanging the solvent in the supernatant for a physiological solution, and

(i) sterilizing the resultant growth-promoting material.

4,436,817

METHOD AND APPARATUS FOR AEROBIC DECOMPOSITION OR DRYING OF ORGANIC WASTE MATERIAL

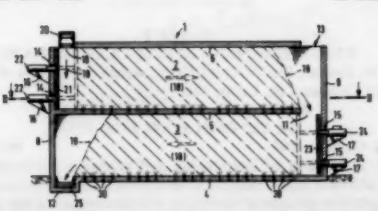
Herbert Nemetz, Bleichstrasse 10, 6369 Schoeneck Hess 1, Fed. Rep. of Germany

Division of Ser. No. 181,953, Aug. 27, 1980, Pat. No. 4,384,877. This application Sep. 16, 1982, Ser. No. 419,010

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1979, 2937390; Nov. 30, 1979, 2948176

Int. Cl.³ C12M *1/04*

U.S. Cl. 435—313 **22 Claims**



1. A composting bin apparatus for aerobic decomposition and drying of organic waste materials comprising: at least one elongated composting passageway chamber comprising in sequence an intake zone, shaping zone, reaction zone, and discharge or transfer zone; said intake zone comprising an opening at the top of the chamber; means for intermittently feeding substantially equal portions or charges of material into the intake zone through said opening; said shaping zone adjoining the intake zone and comprising an ante-chamber closed on the sides for shaping a portion of material received from the intake zone; clearing element means mounted at the intake zone end of the chamber, said clearing element constructed and arranged for reciprocating extension and retraction for pushing and sliding a portion or charge of material received at the intake zone into the shaping zone and for stepwise pushing and compacting successive portions against each other and through the reaction zone; means for extending and retracting said clearing element over a stroke the dimension of said intake zone; said reaction zone comprising an elongate passageway adjoining the shaping zone; means for aerating the material in separate sections spaced along the reaction zone; said discharge or transfer zone adjoining the reaction zone and comprising opening means at the bottom of the chamber for intermittently discharging or transferring portions from the chamber as the portions pass through the reaction zone.

4,436,818

APPARATUS FOR CARRYING OUT AN ANAEROBIC FERMENTATION OF ORGANIC SOLID MATTER FOR THE PURPOSE OF EXTRACTING A COMBUSTIBLE GAS

Peter Widmer, Ruchweid 202, 8911 Oberlunkhofen, Switzerland

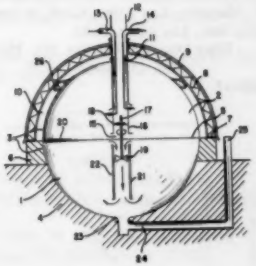
PCT No. PCT/CH81/00077, § 371 Date Mar. 10, 1982, § 102(e) Date Mar. 10, 1982, PCT Pub. No. WO82/00299, PCT Pub. Date Feb. 4, 1982

PCT Filed Jul. 10, 1981, Ser. No. 359,671

Claims priority, application Switzerland, Jul. 11, 1980, 5316/80

Int. Cl.³ C12M *1/02*

U.S. Cl. 435—316 **5 Claims**



1. Apparatus for anaerobic fermentation of organic slurry for the purpose of obtaining a combustible gas therefrom, characterized by:

A. means defining a fermentation chamber having a top edge extending therearound that lies in a substantially horizontal plane and having a bottom surface which converges downwardly from said top edge to a central portion of said bottom surface;

B. rigid supporting structure projecting above said plane;

C. A cover of supple gas tight material extending across the fermentation chamber beneath said supporting structure to define a foldingly contractable and inflatably expandable gas chamber that is above said plane and in open communication with said fermentation chamber, said cover

(1) having an edge portion that is sealed to said top edge of the fermentation chamber all around the same and

(2) having a central portion which is fixedly supportingly

connected to said supporting structure at a level substantially above said plane;

D. weighting means attached to said cover at locations spaced from said central portion thereof and from said edge portion thereof, for gravity loading the cover so that it tends to contract and maintain gas in said gas chamber under pressure;

E. an upright stack duct supported near an upper end thereof by said supporting structure and extending downwardly through said central portion of the cover, in sealed relation thereto, to near said central portion of the bottom surface, said stack duct

(1) having apertures therein at substantially the level of said plane and

(2) comprising means for charging slurry into said fermentation chamber and for withdrawing gas from said gas chamber;

F. a screw pump in said stack duct, below said apertures therein, for pumping slurry between said apertures and the bottom end of the stack duct and thereby agitating slurry in the fermentation chamber; and

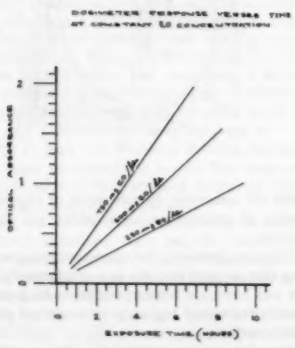
G. means cooperating with the portion of said stack duct that is below said plane to provide a fluid chamber through which heated fluid is circulated for heating the contents of said fermentation chamber.

4,436,819

ETHYLENE OXIDE PROCESS DOSIMETER

Charles R. Manning, Los Altos, Calif., assignor to Assay Tec Associates, Inc., Los Altos, Calif.

Filed Mar. 3, 1982, Ser. No. 354,496
Int. Cl.³ G01N *21/78*
U.S. Cl. 436—1 **13 Claims**



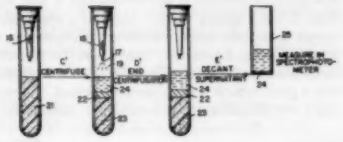
1. A device for colorimetrically quantifying exposure to ethylene oxide which comprises a polymer substrate which exhibits Case II-transport for ethylene oxide through the body of which is dispersed a concentration of a color-forming compound which undergoes a color-change upon reaction with ethylene oxide, said concentration being chosen to provide a variable degree of color-change in said device which, at a uniform temperature, is a previously determined function of the device's quantity of exposure to ethylene oxide.

4,436,820

METHOD AND APPARATUS FOR GLYCOSYLATED HEMOGLOBIN SEPARATING AND MEASURING FRACTIONS

Paul C. Reiter, 20 Celia St., Port Jefferson Station, N.Y. 11776

Filed Feb. 1, 1982, Ser. No. 344,404
Int. Cl.³ G01N *33/72*
U.S. Cl. 436—67 **37 Claims**



16. A method for separating glycosylated hemoglobin from a sample of whole blood fluid comprising:

a. providing a quantity of a cation exchange resin to a container;

b. providing a quantity of a blood cell lysing composition to said container;

c. providing a quantity of blood sample to said container;

d. agitating said container for a period of time;

e. providing said container with a quantity of a viscous polymeric material during agitation; and

f. providing a settling period for said container; whereby during agitation the blood cells of said sample are lysed by the blood cell lysing composition, glycosylated hemoglobin is released from said lysed blood cells and goes into suspension in the blood sample fluid, the remaining hemoglobin from said lysed blood cells binds with the cation exchange resin suspended in the blood sample fluid and settles to the bottom of said container with the other blood cell fragments during the settling period, and the glycosylated hemoglobin remains separately in suspension in the blood sample fluid, said viscous polymeric material providing a permanent barrier between settled solids and the glycosylated hemoglobin in the blood sample fluid.

4,436,821

SIMULATED HUMAN PLATELETS FROM RED BLOOD CELLS

Wayne L. Ryan, Omaha, Nebr., assignor to Streck Laboratories, Inc., Omaha, Nebr.

Filed Apr. 12, 1982, Ser. No. 367,597
Int. Cl.³ G01N *33/48*; C09K *3/00*
U.S. Cl. 436—10 **16 Claims**

1. A lysable, blood platelet reference control comprising a suspension of a mixture of permanently shrunken animal red blood cells in a suspension medium non-deleterious to said cells, said cells having been partially fixed with a fixing agent to reduce cell membrane elasticity prior to being shrunken, and said mixture of permanently shrunken lysable cells in said suspension medium simulating in number, size and volume distribution the platelets present in human whole blood.

4,436,822

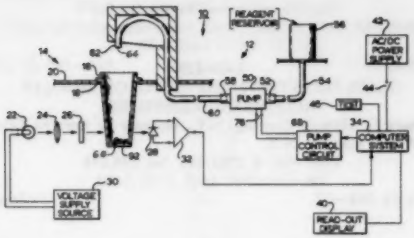
REAGENT MIXING SYSTEM AND METHOD

Ali H. Eseifan, San Franciso, Calif., assignor to Sherwood Medical Company, St. Louis, Mo.

Filed Sep. 22, 1981, Ser. No. 304,453
Int. Cl.³ G01N *31/00, 1/14, 21/24*
U.S. Cl. 436—164 **16 Claims**

1. A method of introducing and mixing a predetermined amount of a liquid reagent with a predetermined amount of a sample in a process of analyzing a characteristic of the sample comprising the steps of successively introducing through nozzle means a plurality of discrete jets of a liquid reagent into a container holding a sample while the nozzle means is spaced

from the container and with sufficient force to effect turbulent mixing of the reagent and specimen with each jet, predeterminately time spacing the jets so that the turbulent mixing caused by one jet is reduced in magnitude before the next jet is introduced, the plurality of the jets providing said predetermined amount of the liquid reagent, and after the last jet has been introduced into the container detecting a characteristic of the container contents.



4,436,823

SILICA GELS INCORPORATING INSOLUBILIZED REAGENTS

Alfred Blümcke; Peter Fischer, both of Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, all of Fed. Rep. of Germany, assignors to Dragerwerk Aktiengesellschaft, Lubeck, Fed. Rep. of Germany

Division of Ser. No. 54,518, Jul. 3, 1979, Pat. No. 4,301,027.
This application May 26, 1981, Ser. No. 267,162
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1978, 2829091
The portion of the term of this patent subsequent to Nov. 17, 1998, has been disclaimed.
Int. Cl.³ C09K *3/00*; G01N *31/22, 21/06*
U.S. Cl. 436—169 **12 Claims**

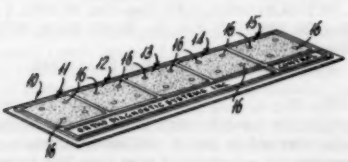
1. A composition consisting essentially of a dried silica gel containing in insolubilized form a normally soluble reagent which retains it reactivity, said reagent being uniformly absorbed in and throughout said silica gel, said reagent being insoluble to solvents in which it is normally soluble.

4,436,824

LEUKOCYTE MIGRATION THROUGH ANTIGEN CONTAINING AGAROSES FOR IMMUNOCOMPETENCE TESTING

David C. Bishop, Sergeantsville, N.J., assignor to Ortho Diagnostic Systems, Inc., Raritan, N.J.

Filed Jun. 9, 1981, Ser. No. 271,864
Int. Cl.³ G01N *33/48, 33/50, 33/54*
U.S. Cl. 436—514 **8 Claims**



1. A method for determining the level of cellular immunocompetence in a patient which comprises the steps of:
(a) obtaining a sample of leukocytes from said patient;
(b) placing a leukocyte sample, with substantially no prior incubation with antigen, in at least one well of each of a plurality of antigen-containing agarose sheets and one control agarose sheet;
(c) incubating the sheets;
(d) determining the amount of leukocyte migration from each well; and
(e) determining the level of cellular immunocompetence of the patient based upon the amount of leukocyte migration in step (d),
wherein each of the plurality of antigen-containing agarose test sheets contains an effective diagnostic concentration of an individual recall antigen and the control agarose sheet contains no antigen.

4,436,825

PROCESS AND REAGENTS FOR ANTIBODY DETECTION INVOLVING ERYTHROCYTE AGGLUTINATION

Parviz Lalezari, Scarsdale, N.Y., assignor to Montefiore Hospital and Medical Center, Inc., Bronx, N.Y.

Continuation of Ser. No. 144,447, Apr. 28, 1980, abandoned.
This application May 21, 1982, Ser. No. 380,939
Int. Cl.³ G01N *33/54*
U.S. Cl. 436—520 **40 Claims**

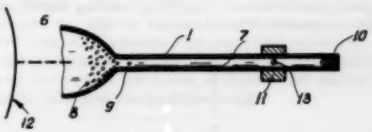
1. A process for the detection of antibodies in a test sample comprising:
(a) preparing an essentially isotonic and low ionic strength suspension comprising said sample, a sensitization effective amount of ethylenediamine tetra-acetate, and erythrocytes in net negatively-charged form;
(b) maintaining said suspension for at least 30 seconds;
(c) combining said suspension with an amount of a solution of polymer effective for agglutination of said erythrocytes;
(d) separating the resultant agglutinates of polymer and erythrocytes from supernatant of said suspension;
(d) dispersing said agglutinates without bound antibody in a hypertonic salt solution having an essentially neutral pH; and
(f) monitoring the resuspended agglutinates for the presence or absence of antibody.

4,436,826

TAGGED IMMUNOASSAY

Chia-Gee Wang, Millwood, N.Y., assignor to Wang Associates, Millwood, N.Y.

Filed Oct. 21, 1981, Ser. No. 313,711
Int. Cl.³ G01N *33/54, 33/56*
U.S. Cl. 436—525 **46 Claims**

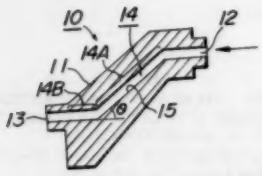


1. An immunoassay method for measurement of the content of a target antigen or antibody in a fluid or tissue specimen, which comprises reacting the target with reagent antibody or antigen which forms a complex with the target and is tagged with tagging elements or compounds which are unassociated chemically with said reagent and are protected against reaction with the target and the biological and chemical environment of the assay, and detecting the formed, tagged complexes.

4,436,827
DETECTING PARTICLE AGGLUTINATION WITH VESSEL HAVING INCLINED, STEPPED BOTTOM SURFACE

Akira Tamagawa, Hino, Japan, assignor to Olympus Optical Co. Ltd., Japan

Filed Jul. 26, 1982, Ser. No. 401,565
Claims priority, application Japan, Jul. 30, 1981, 56-118504
Int. Cl.³ G01N *33/54, 33/80, 21/05, 31/02*
U.S. Cl. 436—534 **12 Claims**



1. A method for detecting a particle agglutination reaction with the aid of a flow cell type reaction vessel comprising:

supplying a test liquid containing particles into a reaction vessel which comprises a tubular body having an inlet, an outlet arranged below said inlet and a passage communicating between said inlet and said outlet, said tubular body being inclined to define an inclined bottom surface by an inner wall of said passage, said bottom surface having a plurality of steps formed therein for forming a stable base layer of particles descending thereon;

keeping the test liquid stationary in the reaction vessel for a predetermined time; and

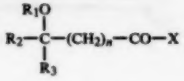
detecting a particle agglutination pattern formed by agglutinated particles settled on the inclined bottom surface.

4,436,828
REACTIVE ASYMMETRICAL DICARBOXYLIC ACID ESTERS AND REAGENTS FOR THE INVESTIGATION OF CARDIAC GLYCOSIDES

Hans-Georg Batz, Tutzing; Hans-Ralf Linke, Wielenbach; Klaus Stellner, Bernried, and Günter Weimann, Tutzing, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Division of Ser. No. 883,981, Mar. 6, 1978, Pat. No. 4,282,151, which is a division of Ser. No. 715,020, Aug. 16, 1976, Pat. No. 4,133,949. This application Oct. 27, 1980, Ser. No. 200,838
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1975, 2537129
Int. Cl.³ A61K *43/00*; **G01N** *33/56*; **C07G** *7/00*
U.S. Cl. 436—545 **9 Claims**

1. Process for the preparation of reagents for the investigation of cardiac glycosides (Digitalis glycosides) in aqueous or physiological solution, comprising reacting dicarboxylic acid ester compounds of the formula



wherein

R_1 is alkyl of up to 3 carbon atoms, or is a digoxin or digitoxin residue

R_2 and R_3 are individually selected from alkoxy of up to 3 carbon atoms or together represent an oxygen atom,

X is cyanomethoxy, succinimido-N-oxy, N-methyl-pyridiniumoxy, 2,4-dinitrophenoxy, 2,4,5-trichlorophenoxy, pentachlorophenoxy, phenylthio, p-nitrophenoxy, p-nitrophenylthio, piperidyl-N-oxy, and

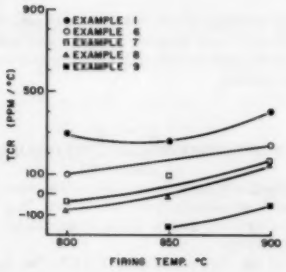
n is 2, 3, 4, or 5

with a protein, or an iodizable amino acid selected from the group consisting of tyramine, histidine, tyrosine or tyrosine ethyl ester, or a peptide containing tyrosine.

4,436,829
GLASS FRITS CONTAINING WO_3 OR MOO_3 IN RUO_2-BASED RESISTORS

Robert G. Howell, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 4, 1982, Ser. No. 345,574
Int. Cl.³ C03C *3/08, 3/10, 3/30*
U.S. Cl. 501—22 **2 Claims**



1. Glass frit compositions for use in thick film, RuO_2-based resistor inks suitable for application to alumina substrates exhibiting coefficients of thermal expansion approximating that of the alumina substrate material and temperature coefficient of resistance values of less than 100 ppm which consist essentially, expressed in terms of mole percent on the oxide basis, of about 32–39% PbO, 44–47% B_2O_3, 14–17% SiO_2, and an effective amount of WO_3 or MoO_3 up to 5%.

4,436,830
COATING FOR METAL-CUTTING TOOLS

Anatoly A. Andreev, Danilevskogo, ulitsa 31, kv. 47; Igor V. Gavrilko, Traktorostroitelei, ulitsa 65, kv. 71, both of Kharkov; Alexei G. Gavrilov, Vostochnaya, ulitsa 11, kv. 6, Domodedovo Moskovskaya oblast; Anatoly S. Vereschaka, Kastanaevskaya, ulitsa 42, korpus 1, kv. 57; Viktor P. Zhed, Uchebny pereulok, 2, kv. 57, both of Moscow; Valentin G. Padalka, Danilevskogo, ulitsa 10, kv. 122, Kharkov, and Andrei K. Sinelschikov, Pervomaiskaya, ulitsa 20, kv. 32, Moscow, all of U.S.S.R.

PCT No. PCT/SU81/00025, § 371 Date Oct. 28, 1982, § 102(e) Date Oct. 28, 1982, PCT Pub. No. WO82/03036, PCT Pub. Date Sep. 16, 1982
PCT Filed Mar. 2, 1981, Ser. No. 438,961
Int. Cl.³ C04B *35/58*
U.S. Cl. 501—96 **1 Claim**

1. A coating for a metal-cutting tool consisting of titanium nitride, characterized in that it additionally contains either chromium nitride in an amount of from 10 to 30% by weight, or aluminium nitride in an amount of from 3 to 18% by weight, molybdenum nitride in an amount of from 2 to 8% by weight, chromium nitride in an amount of from 2 to 10% by weight and silicon nitride in an amount of from 0.5 to 10% by weight, all being taken in combination and uniformly distributed within the volume of the coating.

4,436,831

CALCINED MEMBER FOR ARC-EXTINGUISHING CHAMBERS

Shizutaka Nishizako, Tajimi; Isao Ishii, Amagasaki, and Yoshiaki Sakamoto, Suita, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 15, 1982, Ser. No. 398,695
Claims priority, application Japan, Jul. 15, 1981, 56-110381
Int. Cl.³ C04B 35/04, 35/18
U.S. Cl. 501—119 10 Claims

1. A calcined member for arc-extinguishing chambers, which consists of an inorganic composite insulation material obtained by molding and heat-treating a starting material under pressurized condition, said starting material consisting essentially of 10 to 50% by weight of a mica powder as a base material, 10 to 50% by weight of a magnesium oxide as a charging material, and 25 to 60% by weight of a binder of boric acid, boric anhydride and zinc oxide, the boric acid being present in an amount of 20 to 60 parts by weight based on 100 total parts by weight of binder.

4,436,832

PROCESS FOR THE PREPARATION OF BRIDGED CLAYS, CLAYS PREPARED BY SAID PROCESS, AND USES FOR SAID CLAYS

Pierre Jacobs, 6, Populieren Straat, 1686 Goik; Georges Poncelet, 15, rue de Wavre, 5998 Beauvechain, and Alain Schutz, 4, rue Godincourt, 6778 Musson, all of Belgium

Filed Aug. 26, 1982, Ser. No. 411,769
Claims priority, application France, Aug. 27, 1981, 81 16387
Int. Cl.³ B01J 29/02, 37/06
U.S. Cl. 502—84 46 Claims

1. A process for the preparation of bridged clays, comprising subjecting a mixture of an aqueous solution of at least one metal hydroxide and an aqueous clay suspension to dialysis.

3. A process according to claim 1, wherein said hydroxide is selected from the group formed by the hydroxides of the elements of groups IIB, IIIB, IVB, VB, VIB, VIIB, VIIIB, IA, IIA, IIIA, IVA, VA and VIA of the periodic table of the elements.

4,436,833

PREPARATION OF METHANOL SYNTHESIS CATALYST COMPRISING ZINC, COPPER AND ALUMINUM

Franz J. Broecker, Ludwigshafen; Karl-Heinz Gruendler, Limburgerhof; Laszlo Marosi, Ludwigshafen; Matthias Schwarzmann, Limburgerhof; Bruno Triebskorn, and Guenter Zirker, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 253,662, Apr. 14, 1981, abandoned, which is a division of Ser. No. 82,526, Oct. 9, 1979, abandoned. This application Mar. 25, 1983, Ser. No. 478,995
Int. Cl.³ B01J 27/20, 23/80; L01B 31/24; L07C 29/16
U.S. Cl. 502—176 8 Claims

1. A process for the preparation of a catalyst, for methanol synthesis, from a mixed crystalline material of the formula

$$Cu_{2.2}Zn_{2.8}(OH)_6(CO_3)_2$$

which contains aluminum hydroxide as a structural promoter, wherein the improvement comprises co-precipitating copper, zinc and aluminum nitrates or acetates with sodium bicarbonate.

3. The process of claim 1, wherein said catalyst is comminuted.

5. The process of claim 1, wherein said mixed crystalline material of the formula

$$Cu_{2.2}Zn_{2.8}(OH)_6(CO_3)_2$$

has an X-ray diffraction diagram characterized by at least the following d values of the diffraction lines: 6.75; 3.70; 3.21; 2.90; 2.75; 2.64; 2.15; 1.94; and 1.61.

4,436,834

IRON-THALLIUM CATALYSTS FOR USE IN CO HYDROGENATION AND PROCESS OF PREPARING THE CATALYSTS

Franklin J. Wright, Watchung, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 298,991, Sep. 3, 1981, abandoned, which is a continuation-in-part of Ser. No. 275,451, Jun. 19, 1981, abandoned, which is a continuation of Ser. No. 186,909, Sep. 15, 1980, abandoned. This application Sep. 15, 1982, Ser. No. 418,380
Int. Cl.³ B01J 23/80, 23/82
U.S. Cl. 502—201 16 Claims

1. A catalyst composition consisting essentially of a mixture of an iron compound and a thallium compound, being supported or unsupported, said compound of iron and thallium being selected from the group consisting of an oxide, hydroxide, carbonate, sulfate, carbide, halide, nitrate, or mixtures thereof, wherein the weight ratio of iron-thallium, taken as the free metals, is from about 100:1 to 1:100, and wherein said iron compound contains iron value substantially in the trivalent state, and wherein said thallium compound is substantially deposited on the surface of said iron compound.

4,436,835

PROCESS FOR PREPARATION OF CATALYSTS

Shigeru Horie, Gouzu; Yasuo Yamamoto, Niigata, and Takeo Ikarashi, Niitsu, all of Japan, assignors to Mitsubishi Gas Chemical Company Inc., Tokyo, Japan

Filed Mar. 22, 1983, Ser. No. 477,755
Claims priority, application Japan, Mar. 24, 1982, 57-46497
Int. Cl.³ B01J 27/14
U.S. Cl. 502—208 7 Claims

1. A process for the preparation of a catalyst for the synthesis of methyl formate by dehydrogenating methanol in the gaseous phase, said process being characterized in that (A) at least one phosphate selected from the group consisting of copper phosphates, zinc phosphates and aluminum phosphates, and (B) at least one chloride selected from the group consisting of copper chlorides, zinc chloride, aluminum chloride, alkali metal chlorides and alkaline earth metal chlorides and/or (C) at least one compound selected from the group consisting of alkali metal compounds (exclusive of halides) and alkaline earth metal compounds (exclusive of halides) are added to copper oxide, zinc oxide and aluminum oxide.

4,436,836

CATALYST FOR THE HYDRODEALKYLATION OF ALKYLAROMATIC COMPOUNDS

Francis P. Daly, Haddonfield, N.J., and Frederick C. Wilhelm, West Chester, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 6, 1982, Ser. No. 395,192
Int. Cl.³ B01J 21/04, 23/04, 23/26
U.S. Cl. 502—317 7 Claims

1. A catalyst comprising a gamma-alumina support impreg-

nated with about 8 to 12 wt% chromia and about 0.3 to 0.6 wt% sodium oxide, the catalyst having a surface area from 175 to 275 m^2/g and a pore volume from 0.5 to 1.2 cc/g.

4,436,837

PREPARATION OF ALKANOLS FROM SYNTHESIS GAS

Jiang-Jen Lin, Round Rock, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 29, 1982, Ser. No. 428,491
Int. Cl.³ C07C 27/06
U.S. Cl. 518—700 18 Claims

1. A process for making alkanols which comprises reacting a mixture of CO and H_2 at a pressure of about 500 psig or greater and at a temperature of at least 150° C. in the presence of a catalyst system comprising a ruthenium-containing compound, a samarium-containing compound and a quaternary phosphonium salt, in the presence of an inert, oxygenated solvent.

4,436,838

PROCESS FOR PREPARING ALKANOLS AND ESTERS FROM SYNTHESIS GAS

Jiang-Jen Lin, Round Rock, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,334
Int. Cl.³ C07C 27/06, 29/15
U.S. Cl. 518—700 24 Claims

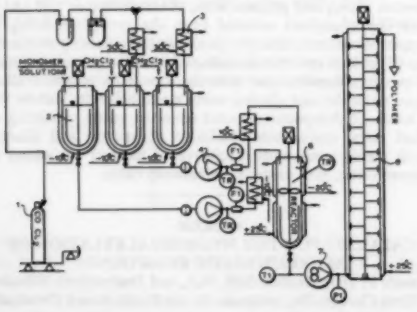
1. A process for making alkanols and esters which comprises reacting a mixture of CO and H_2 at a pressure of about 500 psig or greater and at a temperature of at least 150° C. in the presence of a catalyst system comprising one or more ruthenium-containing compounds, a second metal catalyst selected from groups IVB, VB or VIB, consisting of a zirconium, titanium, vanadium or chromium-containing compound, and a quaternary phosphonium salt, in the presence of an inert, oxygenated solvent.

4,436,839

PROCESS FOR PREPARING POLYCARBONATE-POLYETHER-BLOCKCOPOLYMERS

Joachim Behnke, Amorbach, and Walter Löffelmann, Erlenbach, both of Fed. Rep. of Germany, assignors to Akzo NV, Arnhem, Netherlands

Filed Aug. 11, 1980, Ser. No. 177,463
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1979, 2932737
Int. Cl.³ C08G 18/44, 63/68; C08J 9/28
U.S. Cl. 521—64 20 Claims



1. A method for production of polycarbonate-polyether-copolymers comprising

providing a cooled initial reaction medium in a cooled reaction chamber;

adding to the reaction medium one or more cooled solutions of bisphenol A and polyalkyleneglycol; and

adding to the reaction medium a cooled solution of phosgene in excess of less than about 10 weight-% of the stoichiometrically required weight amount relative to bisphenol A and polyalkyleneglycol in such way that the phosgene contacts substantially the reaction partners from the one or more cooled solutions after they have spread in the reaction medium,

said step of adding being performed in such manner that the one or more cooled solutions are added through a tube ending above the liquid level of the reaction mixture, and the cooled solution of phosgene is added through a tube ending above the liquid level of the reaction medium so that the solutions added contact only within the stirred reaction mixture the reaction partner;

and isolating the copolymer from the reaction mixture.

4,436,840

PROCESS FOR PRODUCING PRE-FOAMED PARTICLES OF POLYOLEFIN RESIN

Hiroyuki Akiyama, Hiratsuka; Sumio Shimada, Kazuma; Kuninori Hirosawa, Isehara, and Hideki Kuwabara, Hatano, all of Japan, assignors to Japan Styrene Paper Corporation, Tokyo, Japan

Filed Sep. 21, 1982, Ser. No. 420,874
Claims priority, application Japan, Sep. 28, 1981, 56-153230
Int. Cl.³ C08J 9/22; B29D 27/00
U.S. Cl. 521—58 2 Claims

1. In a process for producing pre-foamed particles of a polyolefin resin which comprises impregnating a volatile blowing agent into particles of a polyolefin resin while dispersing the resin particles and the blowing agent in a liquid dispersing medium which does not dissolve the resin particles under heat in a closed vessel, opening one end of the vessel and releasing the resin particles and the dispersing medium simultaneously into an atmosphere kept at a lower pressure than the inside pressure of the vessel; the improvement wherein the pressure of the inside of the vessel after opening its one end is maintained at a substantially constant pressure which is at least 0.7 times the vapor pressure of the blowing agent before opening the end of the vessel.

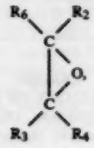
4,436,841

SINGLE-PHASE, STORAGE-STABLE POLYOL COMPOSITIONS CONTAINING SALTS AND THE USE THEREOF IN THE PRODUCTION OF POLYURETHANES

Werner Rasshofer, Cologne; Wolfgang Reichmann, Hilden; Adolf Richartz, Cologne, and Manfred Dietrich, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 24, 1983, Ser. No. 497,640
Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219822
Int. Cl.³ C09K 3/00; C08G 18/14, 18/65
U.S. Cl. 521—106 15 Claims

1. A single-phase, storage-stable, emulsifier-free polyol mixture comprising 100 parts of a relatively high molecular weight polyoxyalkylene polyol of OH number from 20 to 120, which has at least 5% and less than 80%, by weight, of terminal oxyethylene blocks; from 1 to 100 parts of a low molecular weight diol mixture which is a reaction product of ethylene glycol, butane diol-1,4, or a mixture of ethylene glycol and butane diol-1,4 with from 0.05 to 0.50 mols/mol of ethylene glycol, butane diol-1,4 of a mixture of these compounds of alkyl oxiranes corresponding to the formula:



wherein

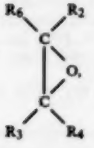
R_1 represents CH_3, CH_2Cl or C_2H_5;

R_2 represents H or CH_3; and

R_3 and R_4 represent H, CH_3 or C_2H_5;

and from 0.01 to 5 parts of solubilizing additives comprising one or more salts, the cations of which are from Groups I, II and III of the Periodic Table, ammonium or mono- to tetra-alkyl ammonium ions, and the anions of which are produced by removing at least one proton from an acid having a pK_a value of at least 10^{-7}.

12. A process for the production of polyurethanes comprising reacting isocyanates with a single-phase; storage-stable, emulsifier-free polyol mixture comprising 100 parts of a relatively high molecular weight polyoxyalkylene polyol of OH number from 20 to 120, which has at least 5% and less than 80%, by weight, of terminal oxyethylene blocks; from 1 to 100 parts of a low molecular weight diol mixture which is a reaction product of ethylene glycol, butane diol-1,4 or a mixture of ethylene glycol and butane diol-1,4, with from 0.05 to 0.50 mols/mol of ethylene glycol, butane diol-1,4 or a mixture of these compounds of alkyl oxiranes corresponding to the formula:



wherein

R_1 represents CH_3, CH_2Cl or C_2H_5;

R_2 represents H or CH_3; and

R_3 and R_4 represent H, CH_3 or C_2H_5;

and from 0.01 to 5 parts of solubilizing additives comprising one or more salts, the cations of which are from Groups I, II and III of the Periodic Table, ammonia or mono- to tetra-alkyl ammonium ions, and the anions of which are produced by removing at least one proton from an acid having a K_a value of at least 10^{-7}.

4,436,842

ALKYL POLYAMINE ETHERS AS CATALYSTS FOR ISOCYANATE REACTIONS

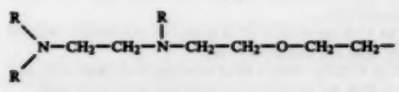
Howard L. Harwell, Zionsville, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 3, 1982, Ser. No. 414,759

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—115 **4 Claims**

1. A process for catalyzing a reaction between an organic isocyanate and a composition that contains active hydrogen as measured and determined by the Zerewitinoff method which comprises carrying out the reaction in the presence of a catalytic quantity of a polyamine represented by the formula:



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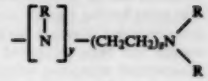


wherein

R is methyl, ethyl,

y is 0 or 1 when x is 1,

z is 0 when Y is 0, and

z is 1 when Y is 1.

4,436,843

HIGH-RESILIENCE POLYURETHANE FOAMS HAVING IMPROVED RESISTANCE TO SHRINKAGE

Richard L. Rowton, and Michael Cuscurida, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 17, 1982, Ser. No. 450,590

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—167 **4 Claims**

1. A high-resilience polyurethane foam having improved resistance to shrinkage, obtained by reacting in the presence of a blowing agent and a catalyst of polyurethane formation, an organic polyisocyanate and a polyol component comprising 10 to 50 weight percent of a polymer polyol and 50 to 90 weight percent of a polyol which is an ethylene oxide-capped propoxylated ethylenediamine adduct having a molecular weight in the range from about 4,000 to 10,000, a hydroxyl number in the range from 25 to 45 and an ethylene oxide content of up to 15%, where the resultant foam possesses improved openness in the absence of subsequent crushing.

4,436,844

PROCESS FOR THE MANUFACTURE OF A FOUNDRY CORE OR MOULD

Arnold Schroeder, Deventer, and Lodewijk Roskott, Gorssel, both of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

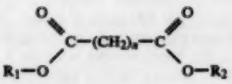
Filed Dec. 20, 1982, Ser. No. 451,638

Claims priority, application Netherlands, Dec. 21, 1981, 8105743

Int. Cl.³ C08K *3/36*

U.S. Cl. 523—144 **5 Claims**

1. An improved process for the manufacture of a foundry core or mould, comprising forming into the foundry core or mould a composition comprising a granular filler, a synthetic resin which cures under the action of an acid and and a desensitized ketone peroxide composition and treating said formed composition with sulphur dioxide, wherein the improvement comprises using as the desensitizing agent a dialkyl ester of an aliphatic dicarboxylic acid of the general formula



wherein n=1-7 and R_1 and R_2=a branched or non-branched alkyl group having 3 to 5 carbon atoms.

4,436,845

TRAFFIC MARKING PAINT

Masao Kitano, Osaka, Japan, assignor to Toa Paint Co., Ltd., Osaka, Japan

Filed Oct. 25, 1982, Ser. No. 436,387

Claims priority, application Japan, Oct. 29, 1981, 56-174020

Int. Cl.³ C09D *5/00, 3/48*; E01F *9/04, 9/08*

U.S. Cl. 523—172 **1 Claim**

1. A traffic marking paint comprising 10 to 40% by weight of a non-aqueous dispersion of a resin having a glass transition

temperature of 20° to 70° C. and having a molecular weight of 10,000 to 20,000, 40 to 60% by weight of a filler, and a pigment, said paint having a solids content of 70 to 90% by weight, said non-aqueous dispersion having a solids content of 50 to 70% by weight and being prepared by polymerizing an ethylenically unsaturated monomer selected from the group consisting of methyl acrylate, methyl methacrylate, ethyl acrylate, ethyl methacrylate, butyl acrylate, butyl methacrylate, 2-hydroxyethyl acrylate, acrylonitrile and styrene in a dispersion medium in the presence of a dispersant selected from the group consisting of an acrylic resin, an alkyd resin, an acrylic modified alkyd resin, chlorinated rubber and polybutadiene, the ratio of said ethylenically unsaturated monomer to said dispersant being from about 70/30 to about 80/20 by weight.

4,436,846

COMPOSITION AND METHOD FOR IMPROVING THE PROPERTIES OF LIQUID MEDIA

Karl W. Krantz, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Division of Ser. No. 91,989, Nov. 7, 1979, Pat. No. 4,341,684, which is a division of Ser. No. 584,417, Jun. 6, 1975, Pat. No. 4,190,069. This application May 14, 1982, Ser. No. 378,200

The portion of the term of this patent subsequent to Feb. 26, 1997, has been disclaimed.

Int. Cl.³ C08K *5/01, 5/04;* **F17D** *1/16, 1/17*

U.S. Cl. 523—175 **18 Claims**

1. A process for transmitting a hydrocarbon fluid through a pipeline at a reduced fluid flow friction loss, which comprises:

A. intermixing with said fluid a composition which is an oil-in-oil emulsion comprising:

(i) a continuous phase of a liquid which is different from but normally miscible with said hydrocarbon fluid, and, dispersed therein,

(ii) a stable discontinuous phase predominantly comprising fine particles of a high molecular weight polymer selected from polyhydrocarbon or polydiorganosiloxane having a molecular weight of at least 500,000 which is ultimately miscible with said hydrocarbon fluid,

the amount of said composition being selected to provide from 10 ppm to 1500 ppm of high molecular weight polymer based on said hydrocarbon fluid; and

B. transmitting the resulting mixture through a pipeline at a velocity sufficient to establish turbulent flow conditions.

4,436,847

RUBBER COMPOSITIONS

Melvin P. Wagner, Barberton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 382,542, May 27, 1982. This application Sep. 30, 1982, Ser. No. 430,108

Int. Cl.³ C08K *3/34, 3/30*

U.S. Cl. 523—203 **16 Claims**

1. In a rubber composition comprising a curable rubber, from 10 to 90 parts, per 100 parts of rubber, of finely divided reinforcing siliceous pigment and a coupling amount of a silane coupling agent, the improvement wherein a silane coupling composition of the silane coupling agent in combination with an alkoxysilane is admixed with said siliceous pigment, said alkoxysilane having the graphic formula:

$$R''—Si—(OR')_3,$$

wherein R' is selected from C_1–C_{10} alkyl or alkoxyalkyl containing from 2 to 10 carbon atoms, and R'' is a C_1–C_{10} alkyl, and the silane coupling agent is chosen from the group consisting of:

(a) organic silane compounds containing an internal active olefinic linkage,

(b) bis(alkoxysilylalkyl)polysulfides,

(c) haloalkylsilanes, and

(d) silane compounds containing a vinyl functional group in the organofunctional portion of the compound, the weight ratio of the silane coupling agent to alkoxysilane being between 0.15:1 and 15:1.

4,436,848

AQUEOUS CO-EMULSIONS OF EPOXY RESIN AND MINERAL OIL

Richard M. Haines, Warsaw; Robert Wong, Granville, and Elisabeth J. Berger, Newark, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 12, 1983, Ser. No. 484,131

Int. Cl.³ B32B *17/08, 17/10;* **C08L** *1/28, 63/02*

U.S. Cl. 523—426 **9 Claims**

1. An aqueous emulsion consisting essentially of: (a) about 30 to about 75 weight percent, based on the total weight of the emulsion, of (i) an emulsified liquid epoxy resin or (ii) an emulsified liquid solution containing a total weight of epoxy resin from about 30 to about 75 percent of the total weight of the emulsion and an organic solvent therefor; (b) about 1 to about 5 weight percent, based on the weight of the epoxy resin, of mineral oil; (c) about 5 to about 12 weight percent, based on the weight of the epoxy resin, of predominantly non-ionic surfactant for emulsifying the epoxy resin or solution thereof and the mineral oil; (d) about 0.5 to about 5 weight percent, based on the weight of the epoxy resin, of an anti-static agent and (e) water.

4,436,849

AQUEOUS RESIN COMPOSITION

Tetsuo Aihara; Yasuharu Nakayama; Koichi Umeyama; Kozo Sawada, and Masaaki Shinohara, all of Hiratsuka, Japan, assignors to Kansai Paint Company, Limited, Hyogo, Japan

Filed Sep. 30, 1982, Ser. No. 431,080

Claims priority, application Japan, Oct. 26, 1981, 56-171115; Dec. 18, 1981, 56-203430

Int. Cl.³ C08L *67/08;* **C09D** *3/68*

U.S. Cl. 523—501 **49 Claims**

1. An aqueous resin composition comprising a neutralization product of an isocyanurate group-containing maleinized alkyd resin having an acid value of 5 to 65 in an aqueous medium, said maleinized alkyd resin being prepared by maleinizing an alkyd resin having an acid value of not more than 10 and a hydroxyl value of not more than 10 which is the product of condensation reaction of

(A) 20 to 60% by weight of at least one of drying or semi-drying oils and fatty acids,

(B) 10 to 45% by weight of at least one tris(hydroxyalkyl-)isocyanurate,

(C) 0 to 45% by weight of at least one polyhydric alcohol other than the component (B),

(D) 10 to 45% by weight of at least one polybasic acid, and

(E) 0 to 15% by weight of at least one monobasic acid.

23. An aqueous emulsion resin composition obtained by emulsion polymerization of a radical polymerizable unsaturated monomer in an aqueous medium in the presence of a neutralization product of an isocyanurate group-containing maleinized alkyd resin having an acid value of 6 to 65, said maleinized alkyd resin being prepared by maleinizing an alkyd resin having an acid value of not more than 10 and a hydroxyl value of not more than 10 which is the product of condensation reaction of

(A) 20 to 60% by weight of at least one of drying or semidrying oils and fatty acids,

(B) 10 to 45% by weight of at least one tris(hydroxyalkyl-)isocyanurate,

(C) 0 to 45% by weight of at least one polyhydric alcohol other than the component (B),

(D) 10 to 45% by weight of at least one polybasic acid, and

(E) 0 to 15% by weight of at least one monobasic acid.

4,436,850

STABILIZING SBR LATEX IN CEMENT FORMULATIONS WITH LOW MOLECULAR WEIGHT POLYMERS

Patricia E. Burdick, Budd Lake, and Ronald J. Rapp, Florham Park, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Oct. 19, 1981, Ser. No. 312,480

Int. Cl.³ C08K *3/00*

U.S. Cl. 524—8 **16 Claims**

1. A composition comprising:

cement; latex containing an elastomer, water; and 0.1 to 10 times the weight of the elastomer of a low molecular weight polymer, selected from the group consisting of a polyethylene having a number average molecular weight of from 6,000 to 20,000 and an oxidized polyethylene having an acid number from 7 to 40.

4,436,851

SILICONE RESIN COATING COMPOSITION CONTAINING AN ULTRAVIOLET LIGHT ABSORBING AGENT

Howard A. Vaughn, Jr., Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation-in-part of Ser. No. 964,910, Nov. 30, 1978, abandoned. This application Apr. 1, 1982, Ser. No. 364,302

The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.

Int. Cl.³ C08J *3/00*; C08L *1/28, 5/00, 83/04*

U.S. Cl. 524—43 **17 Claims**

1. An aqueous coating composition comprising a dispersion of colloidal silica in an aliphatic alcohol-water solution of the partial condensate of a silanol of the formula $RSi(OH)_3$, wherein R is selected from the group consisting of alkyl having from 1 to 3 carbon atoms and aryl, at least 70 weight percent of the silanol being $CH_3Si(OH)_3$, said composition containing 10 to 50 weight percent solids consisting essentially of 10 to 70 weight percent colloidal silica and 30 to 90 weight percent of the partial condensate, the composition further containing from about 0.1 to about 1.0 weight percent of a thickening agent selected from the group consisting of hydroxypropyl guar gum and hydroxypropyl cellulose and a small amount effective to prevent discoloration of the substrate to which said coating composition is applied of an ultraviolet light absorbing agent which is soluble in the composition, said composition having a pH of 7.1 to about 7.8.

4,436,852

PROCESS FOR THE COLORATION OF LINEAR POLYESTERS IN THE MELT WITH PERYLENETETRACARBOXYLIC ACID BIS-METHYLIMIDE

Fridolin Bäbler, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 338,710, Jan. 11, 1982, abandoned, which is a continuation of Ser. No. 156,243, Jun. 4, 1980, abandoned. This application Nov. 2, 1982, Ser. No. 438,445

Claims priority, application Switzerland, Jun. 15, 1979, 5624/79

Int. Cl.³ C08L *67/02*

U.S. Cl. 524—88 **6 Claims**

1. A process for colouring linear polyester in the melt in navy blue and dark blue shades, which process comprises using, as colourant, a mixture consisting of 0.2 to 1% by weight of finely dispersed, undissolved perylenetetracarboxylic acid bis-methylimide, based on the amount of polyester, and a blue polymer-soluble colourant.

4,436,853

PHENOL-MELAMINE RESINS FOR IMPROVING RUBBER TO METAL ADHESION

William W. Schloman, Jr., Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

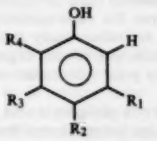
Filed Aug. 20, 1982, Ser. No. 409,790

Int. Cl.³ C08L *7/00, 9/00, 9/02, 9/06*

U.S. Cl. 524—91 **13 Claims**

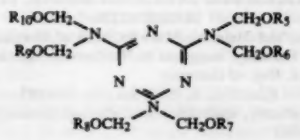
1. A rubber compound, including an adhesion promoter for rubber to metal adhesion, comprising:

the adhesion promoter consisting of the reaction product of a phenol and a substituted melamine, said phenol having the formula



where R_1, R_2, R_3 and R_4 may be the same or different and are selected from the group consisting of hydrogen and C_1 to C_{10} acyclic and cyclic alkyl radicals; and

a substituted melamine having the formula



R_5, R_6, R_7, R_8, R_9 and R_{10} are selected from the group consisting of C_1 to C_5 alkyl radicals; wherein said reaction product is added to a rubber compounding recipe in an amount between 1 and 8 parts per 100 parts by weight rubber; and

wherein the rubber is a sulfur curable elastomer.

4,436,854

SELF-EXTINGUISHING THERMOPLASTIC MOLDING MATERIAL

Franz Brandstetter, Neustadt; Volker Muench, Ludwigshafen; Herbert Naarmann, Wattenheim, and Edmund Priebe, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 29, 1982, Ser. No. 344,015

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1981, 3105946

Int. Cl.³ C08K *5/52, 5/53*; C08L *71/04*

U.S. Cl. 524—139 **2 Claims**

1. A self-extinguishing thermoplastic material comprising

(A) from 70 to 10 parts by weight of an impact-resistant styrene polymer containing a soft component based on a grafted polybutadiene or a grafted copolymer of butadiene and styrene,

(B) from 30 to 90 parts by weight of a polyphenylene ether and

(C) from 1 to 20 parts by weight of a phosphorus-containing compound as flameproofing additive,

wherein the soft component of the impact-resistant styrene polymer (A) consists essentially of a mixture of from 98 to 10 percent by weight of particles having a mean particle size of from 0.3 to 1.2 μm and from 2 to 90 percent by weight of particles having a mean particle size of from 4 to 10 μm and wherein said mixture is obtained by blending impact-resistant styrene polymers whose soft components have different particle sizes.

4,436,855

TWO-COMPONENT URETHANE COATING SYSTEM

William A. Higgins, Gates Mills, and John S. Perz, Mentor, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 376,821, May 12, 1982, abandoned. This application Jun. 29, 1983, Ser. No. 508,992

Int. Cl.³ C08K 5/52

U.S. Cl. 524—145 79 Claims

1. A composition comprising:

(A) an organic polyfunctional isocyanate;

(B) a non-Newtonian colloidal disperse system comprising (1) solid metal-containing colloidal particles predisposed in (2) a disperse medium of at least one inert organic liquid and (3) as an essential third component at least one member selected from the class consisting of organic compounds which are substantially soluble in said disperse medium, the molecules of said organic compound being characterized by polar substituents and hydrophobic portions; and

(C) an acidic ester of a phosphoric acid, the organic portions of said acidic ester being selected from the group consisting of hydrocarbyloxy and hydroxy-substituted hydrocarbyloxy compounds.

4,436,856

AQUEOUS ORGANOPOLYSILOXANE EMULSIERS AND A PROCESS FOR TREATING ORGANIC FIBERS THEREWITH

Karl Huhn, and Heinrich Marwitz, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 8, 1982, Ser. No. 346,457

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1981, 3104582

Int. Cl.³ C08L 83/04

U.S. Cl. 524—211 10 Claims

1. An aqueous emulsion for impregnating organic fibers comprising (1) an organopolysiloxane having diorganosiloxane units in which both organic radicals are monovalent hydrocarbon radicals, and at least two monovalent SiC-bonded organic radicals having a basic nitrogen atom per molecule, in which the SiC-bonded organic radicals having a basic nitrogen atom are present in monoorganosiloxane units; (2) an organopolysiloxane with at least 3 Si-bonded hydrogen atoms per molecule; (3) a catalyst for the condensation of Si-bonded condensable groups; (4) an emulsifier selected from the group consisting of an organosiloxane-oxyalkylene block copolymer in which the oxyalkylene block is bonded to the organosiloxane block through an SiOC bond, a nonionic emulsifier, an anionic emulsifier and mixtures thereof; and (5) a diorganopolysiloxane having an Si-bonded hydroxyl group in each of its terminal units and whose organic radicals are free of nitrogen.

4,436,857

COATING RUBBER WITH A COMPOSITION WHICH RESISTS REMOVAL BY WATER

Tiong H. Kuan, Stow, and John G. Sommer, Hudson, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 213,433, Dec. 5, 1980, abandoned, which is a continuation of Ser. No. 93,771, Nov. 13, 1979, abandoned, which is a division of Ser. No. 21,380, Mar. 19, 1979, Pat. No. 4,217,395, which is a continuation-in-part of Ser. No. 931,597, Aug. 7, 1978, abandoned. This application Aug. 6, 1981, Ser. No. 290,637

Int. Cl.³ C08K 5/05

U.S. Cl. 524—260 5 Claims

1. A composition of matter comprising a compounded aqueous polymeric latex containing a carboxylated copolymer having a glass transition temperature of not less than about −30° C., and in which said copolymer consists essentially of a carboxylated copolymer of (1) at least 45% by weight of a monomer selected from the group consisting of styrene, vinyl toluene, acrylonitrile, methacrylonitrile, acrylamide, methacrylamide, methylmethacrylate and ethylmethacrylate and mixtures thereof, (2) a copolymerizable monomer selected from the group consisting of acrylic acid, meethacrylic acid, ethacrylic acid, maleic acid, fumaric acid, itaconic acid, citraconic acid, sorbic acid and crotonic acid and mixtures thereof in an amount of up to 10% by weight and (3) the balance in an amount sufficient to provide some flexibility to and for vulcanization of the copolymer, a copolymerizable monomer selected from the group consisting of butadiene-1,3, isoprene, 2,3-dimethyl-butadiene-1,3 and piperylene and mixtures thereof, said latex being compounded with from about 150 to 1000 parts by weight of inorganic, nonblack rubber compounding pigments per 100 parts by weight of said copolymer in said latex, from about 1 to 30 parts by weight of rubber stabilizers and wetting agents per 100 parts by weight of said copolymer in said latex and a heat sensitizer for said copolymer in said latex in an amount of from about 0.75 to 15 parts by weight per 100 parts by weight of said copolymer in said latex, said heat sensitizer being selected fom the group consisting of the zinc ammine system, polyvinylmethylether, polypropylene glycol, 2-nitro-2-methyl-1-propanol and polyoxypropylene oxyethylene glycol and mixtures thereof, the total solids content of said latex being from about 10 to 75% by weight and said composition characterized in being able to provide a hot, sticky rubber compound with an adherent water resistant coating or film so that the rubber can be water cooled and dried and assembled or stacked without sticking.

4,436,858

PLASTICIZED POLYDICYCLOPENTADIENE AND A METHOD FOR MAKING THE SAME

Daniel W. Klosiewicz, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed May 14, 1982, Ser. No. 378,449

Int. Cl.³ C08K 5/12

U.S. Cl. 524—296 6 Claims

1. A method for making a crosslinked polymer of polymerized units of DCPD comprising: first, combining a plurality of reactant streams, one of which contains the activator of a methathesis-catalyst system, and a second, which contains a catalyst of said methathesis-catalyst system, and at least one of which contains dicyclopentadiene, and at least one of which contains an ester plasticizer having a solubility parameter of from 7.8 to about 10.2 to form a reaction mixture and then immediately injecting the reaction mixture into a mold where polymerization occurs.

4,436,859

POLYNORBORNENES CURED WITH ISOCYANATES AND OPTIONALLY WITH POLYOLS

Claude Stein, Gouvieux, and Andre Marbach, Verneuil, both of France, assignors to Societe Chimique des Charbonnages S.A., Paris, France

Filed Aug. 7, 1981, Ser. No. 291,150

Claims priority, application France, Aug. 8, 1980, 80 17514

Int. Cl.³ C08K 5/12, 5/01, 5/11; C08F 8/30

U.S. Cl. 524—297 19 Claims

1. In a process for preparing a ring-opened polynorbornene composition which is castable at ambient temperature, comprising the step of admixing, at ambient temperature, a finely divided ring-opened polynorbornene prepared by ring-opening catalytic polymerization, with an effective fluidifying amount of an ester or hydrocarbon plasticizer and an effective amount for curing of a curing agent, thereby forming a castable fluid mixture,

the improvement wherein said curing agent is an isocyanate cross-linking agent; whereby the resultant mixture is castable and curable at ambient temperature and the resultant cured elastomeric product has an improved compression

modulus and residual set while retaining its desired rebound elasticity values.

4,436,860

REINFORCED THERMOPLASTIC COMPOSITION

Leonard R. Hepp, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 316,948, Oct. 30, 1981, abandoned. This application May 24, 1983, Ser. No. 497,503

Int. Cl.³ C08K 3/40

U.S. Cl. 524—394 6 Claims

1. A reinforced thermoplastic composition which has a high deflection temperature under load at 264 psi and which molds into opaque, crystalline specimens in thin, thick and large/flat parts exhibiting improved control in warpage, said composition comprising:

(A) a stable blended resinous combination comprising:

(i) from about 60 to about 90 parts by weight of a poly(ethylene terephthalate) resin and

(ii) from about 40 to about 10 parts by weight of a poly(1,4-butylene terephthalate) resin or a copolyester thereof with a minor amount of an aliphatic or aromatic dicarboxylic acid or an aliphatic polyol;

(B) from about 5 to about 60 parts by weight per 100 parts by weight of said composition of reinforcing filamentous glass;

(C) an internal nucleating amount of sodium stearate, alone, or in further combination with

(D) an effective, property improving amount of an oxirane compound.

4,436,861

POLYVINYL CHLORIDE CONTAINING ALKYL ACRYLATE AND ALKYL METHACRYLATE SEQUENTIALLY POLYMERIZED THEREON

Minoru Ushioda, Amagasaki; Kenji Ueno; Hiroyasu Furukawa, both of Takasago, and Masahiro Kobayashi, Amagasaki, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 17, 1982, Ser. No. 358,889

Claims priority, application Japan, Mar. 19, 1981, 56-41259

Int. Cl.³ C08L 27/22; C08F 259/04

U.S. Cl. 524—425 7 Claims

1. A particulate modified vinyl chloride polymer prepared by a process which comprises: (1) impregnating porous particles of a vinyl chloride polymer with an alkyl acrylate having a C_4 to C_{18} alkyl group, (2) polymerizing said alkyl acrylate, (3) adding an alkyl methacrylate having a C_1 to C_4 alkyl group to the polymerization system in the course of said polymerization of said alkyl acrylate, and (4) continuing said polymerization, the total amount of said alkyl acrylate and said alkyl methacrylate being from 2 to 20 parts by weight per 100 parts by weight of said porous particles, and the weight ratio of said alkylacrylate to said alkyl methacrylate being from 90/10 to 60/40.

4,436,862

THERMALLY STABLE THICKENER

Marvin T. Tetenbaum, Wexford, Pa., and Burlon C. Crowley, Toms River, N.J., assignors to NL Industries, Inc., New York, N.Y.

Filed Jun. 14, 1983, Ser. No. 504,156

Int. Cl.³ C08K 3/34

U.S. Cl. 524—445 30 Claims

1. A thermally stable thickener comprised of:

(a) a stabilizing agent which is at least one smectite-type clay having a cation exchange capacity of at least 75 milliequivalents per 100 grams of clay, 100% active clay basis; and

(b) a water dispersible polyurethane which, when mixed into an aqueous composition alone, results in a thickened aqueous composition that exhibits a decrease in room temperature Stormer viscosity after one month at 140° F., said stabilizing agent and said water dispersible polyurethane being in a dry weight ratio in the range of from 1:9 to 9:1.

4,436,863

USE OF ETHYLENE-VINYL ACETATE COPOLYMERS AND OXIDIZED HIGH DENSITY POLYETHYLENE HOMOPOLYMERS AS PROCESSING AIDS FOR TALC FILLED POLYPROPYLENE COMPOUNDS

Paul J. Albee, Jr., Bensalem, Pa., and Patricia E. Burdick, Budd Lake, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 1, 1981, Ser. No. 259,406

Int. Cl.³ C08K 3/34, 5/10

U.S. Cl. 524—451 14 Claims

1. A composition comprising:

polypropylene;

from 1 percent to 50 percent based on the weight of the polypropylene of talc;

from 0.1 percent to 10 percent based on the weight of the polypropylene of an ethylene-vinyl acetate copolymer having from 2 to 45 percent by weight of the vinyl acetate moiety and a Brookfield viscosity at 140° C. of from 300 centipoises to 700 centipoises.

4,436,864

AQUEOUS EMULSIONS OF ACRYLAMIDE AND RUBBER MODIFIED ASPHALTS

Anthony V. Grossi, Newark; Leon A. Hagelee, Minerva Park; Louis T. Hahn, and Alfred Marzocchi, both of Newark, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 329,902, Dec. 11, 1981, Pat. No. 4,394,481. This application Dec. 27, 1982, Ser. No. 453,031

The portion of the term of this patent subsequent to Dec. 6, 2000, has been disclaimed.

Int. Cl.³ C08L 91/00

U.S. Cl. 524—458 15 Claims

1. In an asphalt emulsion comprising water, an asphaltic material and effective emulsifying amounts of an emulsifier, the improvement wherein said asphaltic material is the prereacted reaction product produced by reacting an acrylamide, asphalt having a viscosity of less than about 120,000 cps (at 140° F.), a vinyl aromatic monomer and a rubbery polymer.

4,436,865

POLY(ARYLENE SULFIDE) COMPOSITION SUITABLE FOR MOLDING

William H. Beever, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 29, 1982, Ser. No. 445,307

Int. Cl.³ C08K 3/02, 3/40, 3/36

U.S. Cl. 524—504 8 Claims

1. A composition suitable for molding comprising:

(a) from about 25 to about 50 weight percent poly(arylene sulfide),

(b) from about 10 to about 30 weight percent reinforcing agent,

(c) from about 30 to about 60 weight percent filler,

(d) from about 0.5 to about 2 weight percent of processing aid,

(e) from zero to about 3 weight percent colorant, and

(f) from about 0.5 to about 2 weight percent of an oil-soluble organonitrogen compound grafted hydrogenated conjugated diene/monovinylarene copolymer having (1) a polymerized monovinylarene content of about 20 to 70 weight percent with the proviso that when said copolymer contains a random block, the block polymonovinylarene content is in the range of about 15 to 35 weight percent, (2) a number average molecular weight suitable for oil solubility, (3) the extent of hydrogenation of said copolymer such that about at least 95 weight percent of olefinic double bonds having been saturated and (4) less

than about 5 weight percent of aromatic double bonds having been saturated, said copolymer characterized as having been prepared by the process which comprises metalating a hydrogenated conjugated diene hydrocarbon/monovinylarene hydrocarbon copolymer, and reacting the resulting metalated hydrogenated copolymer with effective amounts of at least one nitrogen-containing organic compound represented by the general formulae $X\text{-}Q\text{-}(NR^3_2)_n$ or $Y[Q\text{-}(NR^3_2)_n]_m$ wherein each R^3 is the same or different alkyl, cycloalkyl, aryl, or combination radical, Q is a hydrocarbon radical having a valence of n+1 and is a saturated aliphatic, saturated cycloaliphatic, aromatic or combination radical, X is a functional group capable of reaction on a one-to-one basis with one equivalent of polymer metal, Y is or contains a functional group capable of reacting on a one-to-one basis with one equivalent of polymer metal, n is at least one, and m is 2 or 3, thereby preparing said grafted copolymer.

4,436,866

AQUEOUS, ADHESIVE COATING COMPOSITION WITH A NON-SELFCROSSLINKABLE ELASTOMER FOR USE WITH FILAMENTARY MATERIALS

Mikhail M. Girgis, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 238,725, Feb. 27, 1981, Pat. No. 4,405,746. This application Nov. 25, 1981, Ser. No. 324,750

The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.

Int. Cl.³ C08L *61//12*

U.S. Cl. 524—510 **20 Claims**

1. An aqueous adhesive coating composition for treating filamentary materials to reinforce elastomeric matrix materials, comprising:

(1) at least three elastomeric materials, where the total gel content of the coating composition attributable to the elastomeric materials is less than about 70 weight percent based on the aqueous coating composition, wherein the three elastomeric materials are:

A. A vinyl-pyridine-containing elastomeric latex selected from the group consisting of an elastomeric copolymer latex produced from a vinyl pyridine-containing monomer and 1,3-diene hydrocarbon monomer and an elastomeric terpolymer latex produced from vinyl pyridine-containing monomer, 1,3-diene hydrocarbon monomer and a vinyl-containing monomer,

B. non-self-crosslinkable elastomeric homopolymer or interpolymer latex, wherein the elastomer has been formed by the reaction of 1,3-diene hydrocarbon monomers, and where the elastomeric latex has a gel content of less than 40% and an average particle size of less than around 2000 angstroms.

C. carboxylated butadiene polymer having an amount of bound styrene not exceeding 75 weight percent, of the copolymer and having an amount of carboxylation in the range of about 1 to about 10 weight percent, of the copolymer where the amount of the copolymer present is in the range of 3 to about 10 weight percent of the coating on a dry solids basis, and

(2) phenolic aldehyde condensate polymer,

(3) and water.

4,436,867

CREPING ADHESIVES CONTAINING POLY 2-ETHYL-2-OXAZOLINE

William S. Pomplun, Winnebago County, and Herbert E. Grube, Outagamie County, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jun. 17, 1982, Ser. No. 389,193

Int. Cl.³ C08L *29/04, 39/06*; B31F *1/12*

U.S. Cl. 524—503 **5 Claims**

1. A creping adhesive for use in a throughdrying process for the manufacture of creped wadding, said creping adhesive consisting essentially of an aqueous admixture of from about 5 to about 60 dry weight percent poly 2-ethyl-2-oxazoline and a thermoplastic polymer having sufficient strength to form an adhesive film, said thermoplastic polymer being selected from the group consisting of polyvinyl alcohol, ethylene/vinyl acetate copolymer, and polyvinyl pyrrolidone.

4,436,868

INSULATION COMPOSITION

Kendall R. Harris, Houston, Tex., assignor to B & B Insulation, Inc., Houston, Tex.

Filed Dec. 27, 1982, Ser. No. 453,783

Int. Cl.³ C08K *3/22, 3/08*

U.S. Cl. 524—783 **4 Claims**

1. A composition comprising:

25–40% by weight silicone gel;

30–60% by weight powdered lead; and

5–35% by weight lead oxide.

4,436,869

PRODUCTION OF CLOSED-CELL POLYURETHANE MOLDINGS HAVING A DENSIFIED SURFACE ZONE

Otmar Zipp, Osnabruecke; Heinz Bollmann, Alfhausen; Herbert Stutz, Karlsruhe, and Wolfgang Scholz, Lemfoerde, all of Fed. Rep. of Germany, assignors to Elastogran GmbH, Fed. Rep. of Germany

Filed Mar. 30, 1982, Ser. No. 363,406

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1981, 3113690

Int. Cl.³ C08G *18/14*

U.S. Cl. 525—51 **7 Claims**

1. A process for the production of polyurethane moldings which have a densified surface zone and substantially closed cells by reacting organic polyisocyanates, polyols and water, wherein

(a) 100 parts by weight of an NCO-containing prepolymer, having an NCO content from 3 to 6% by weight, said polymer being prepared by reacting organic diisocyanates and substantially linear polyester-polyols or polytetramethylene ether glycol and

(b) 0.5 to 1.6 parts by weight of water are mixed thoroughly in the presence of

(c) one or more catalysts

(d) one or more surfactants, cell regulators, flameproofing agents, stabilizers, dyes, pigments, and fillers as assistants and/or additives,

the resulting reaction mixture is introduced into a mold of which the inner wall has a surface temperature of from 50° C. to 70° C., the mold is closed and the mixture is allowed to harden whilst undergoing densification.

4,436,870

PRODUCTION OF MOLDING MATERIALS CONTAINING POLYPHENYLENE ETHERS

Klaus Hinselmann, Mutterstadt; Herbert Naarmann, Wattenheim; Adolf Echte, Ludwigshafen; Eduard Heil, Limburgerhof; Albert Nikles, Ludwigshafen; Rudi W. Reffert, Beindersheim, and Juergen Hambrecht, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 22, 1982, Ser. No. 400,689

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131440

Int. Cl.³ C08L *71/04*

U.S. Cl. 525—53 **4 Claims**

1. A process for the production of a molding material containing a high molecular weight polyphenylene ether from a solution of polyphenylene ether in an organic solvent, together with a homopolymer or copolymer of styrene, by freeing such solution from the solvent, said process comprising: heating a polyphenylene ether solution in a first stage to from 190° to 250° C. to concentrate the solution to a solids content of from

15 to 60% by weight, and thereafter, in a second stage, adding the styrene homopolymer or copolymer to the concentrated solution, whereupon the resulting solution of the polymer mixture is freed of the solvent by multi-stage evaporation under reduced pressure.

4,436,871

IMIDE-SAN POLYMER-BLENDS

William H. Staas, Churchville, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed May 10, 1982, Ser. No. 376,479
Int. Cl.³ C08L *25/12, 25/14, 35/06, 51/00*
U.S. Cl. 525—64 12 Claims

1. Composition comprising a soluble or partly soluble blend of (A) about 1 to 99 parts by weight polyglutarimide and (B) about 99 to 1 part by weight of (1) a single stage polymer consisting essentially of a styrene-acrylonitrile copolymer, or (2) a mixture of (1) with a multiple stage polymer having a final stage consisting essentially of a styrene-acrylonitrile copolymer.

4,436,872

HIGH IMPACT MOLDING COMPOSITIONS

Paul W. Flood, Lake Hopatcong; Charles D. Mason, Chatham Township, and Stephen R. Schulze, West Caldwell, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 209,182, Nov. 21, 1980, Pat. No. 4,335,223, which is a continuation-in-part of Ser. No. 46,536, Jun. 7, 1979, abandoned, which is a continuation-in-part of Ser. No. 914,705, Jun. 12, 1978, abandoned. This application Mar. 29, 1982, Ser. No. 363,365
Int. Cl.³ C08L *77/00, 77/02*
U.S. Cl. 525—179 18 Claims

1. A melt-blended polyamide composition comprising:

from 60 to 98 percent by weight of the composition of a polyamide selected from the group consisting of polyhexamethyleneadipamide, polyepsiloncaprolactam, and a mixture of polyhexamethyleneadipamide and polyepsiloncaprolactam,

an acid copolymer of an α-olefin having 2 to 5 carbons, with 1 to 20 mol percent of an unsaturated carboxylic acid having 3 to 8 carbons;

an ester copolymer of an α-olefin having 2 to 5 carbons, with 1 to 20 mol percent of an alkyl ester of an unsaturated carboxylic acid having 3 to 8 carbons and the alkyl group having 1 to 4 carbon atoms, the weight proportions between the acid copolymer and ester copolymer being from 1 part of acid copolymer to 10 parts of ester copolymer up to 30 parts acid copolymer to 1 part ester copolymer;

from about 0.05 to 1.0 percent by weight based on the weight of the composition of a metal compound having the cation of a metal selected from Group IA, IB, IIA, IIB, IIIA, IVA, VA, VIB, VIIB, and VIIIB of the Periodic Table of the Elements, and the anion of the metal compound is selected from the group consisting of hydrides, formates, acetates, alcoholates, glycolates, and halides and wherein the notched Izod impact resistance of the composition is higher than for a like composition not containing the metal compound the composition being blended under conditions wherein the metal compound remains substantially unreacted with the copolymer acid.

4,436,873

CONJUGATED DIENE BLOCK POLYMER AND PROCESS FOR PREPARING THE SAME

Hiroshi Furukawa, Kobe; Yuichi Saito, Nishinomiya; Akio Imai; Keisaku Yamamoto, both of Ichihara; Hiroyoshi Takao, Chiba, and Nobuyuki Yoshida, Ichihara, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 324,545, Nov. 24, 1981, abandoned. This application Mar. 21, 1983, Ser. No. 477,583
Claims priority, application Japan, Nov. 27, 1980, 55-167836
Int. Cl.³ C08F *297/02*
U.S. Cl. 525—314 4 Claims

1. A linear block polymer of a conjugated diene, having a Mooney viscosity of 20 to 120 at 121° C. and consisting essentially of blocks (A) and (B) defined by the following conditions (1) to (4);

(1) the block (A) of which the content of 1,2- and/or 3,4-bonding is from 20 to 60% by mole,

(2) the block (B) of which the content of 1,2- and/or 3,4-bonding is from 50 to 90% by mole,

(3) the difference in the 1,2- and/or 3,4-bonding content between the block (A) and the block (B) is from 20 to 50% by mole, and

(4) the average content of 1,2- and/or 3,4-bonding in the block polymer consisting essentially of the blocks (A) and (B) is from 50 to 85% by mole.

4,436,874

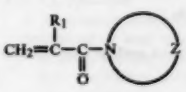
ACRYLIC COPOLYMERS AND THEIR USE IN SOLID PHASE PEPTIDE SYNTHESIS

Christian Aspisi, Boulgon; Bernard Calas, Saint-Gely du Fesc; Jacques Daunis, Montpellier; Michel Follet, Aramon; Robert Jacquier, and Joseph Parello, both of Montpellier, all of France, assignors to Societe d'Expansion Scientifique "EXPANSIA", Paris, France

Filed Nov. 10, 1982, Ser. No. 440,440
Claims priority, application United Kingdom, Nov. 19, 1981, 8134861
Int. Cl.³ B01J *31/08;* C08F *220/58, 220/60*
U.S. Cl. 525—327.1 6 Claims

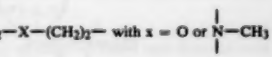
1. New amino-functionalized acrylic copolymers derived by functionalization by ethylene diamine on R_3 substituent of the copolymers containing:

from 30% to 90%, by weight, of a monomer (matrix) corresponding to an N-acryloylpolymethylenimine of formula



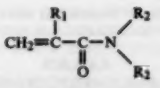
with R_1 = H or $-CH_3$

$Z = -(CH_2)_{n1}-$ with n_1 = 4, 5 or 6 or



with x = O or

or a N-acryloyldialkylamide, of formula:

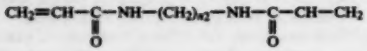


with

R_1 having the same meaning as above

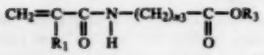
$R_2 = -CH_3$ or $-C_2H_5$

from 2% to 50%, by weight, of a monomer (linker) corresponding to an N,N'-diacryloyldiaminoalcane of formula



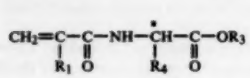
with $n_2 = 1$ or 2

and from 2% to 65%, by weight, of a monomer (functionalization agent) corresponding to an acryloylaminoacid or ester, racemic of formula:



with R_1 = H or $-CH_3$
R_3 = H or $-CH_3$
n_3 = 1, 2, 3 or 5

or an asymetric N-acryloylaminoacide (or ester) (L series) of the formula:



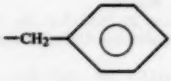
with R_1 = H or $-CH_3$

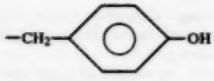
R_3 having the same meaning as above

$R_4 = -CH_3$

$-CH(CH_3)_2$

$-CH_2(CH_3)_2$

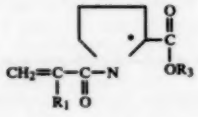




$-CH_2-CH_2-S-CH_3$

$-(CH_2)_4-NH_2$

or the N-acryloyl (L) proline, or its methyl ester of the formula:



with R_1 = H or $-CH_3$

R_3 having the same meaning as above.

4,436,875

CURABLE POLYMERIC COMPOSITIONS

Eugene R. Janiga, Gladwin, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 25, 1979, Ser. No. 88,273
Int. Cl.³ C08F 8/00
U.S. Cl. 525—385 **11 Claims**

1. A curable polymeric composition comprising a catalytic reactive polymeric component bearing at least one catalytic, anionic group of a strongly acidic group having a pK_a of less than about 3 and a plurality of a pendant carboxyl containing coreactive group selected from the group consisting of —COOH, —COOR wherein R is a hydrocarbyl or inertly substituted hydrocarbyl or —COX wherein X is —Cl or —Br, said composition having dispersed therein a coreactive component which contains a number of latent coreactive groups sufficiently inert to the carboxyl containing coreactive group such that the composition is stable at ambient temperatures, which latent groups are converted to groups coreactive with the carboxyl containing coreactive groups in the presence of an amount of catalytic, anionic groups and at elevated temperatures sufficient to cure the composition.

4,436,876

BLOCK COPOLYMERS OF POLYPHENYLENE OXIDES AND STERICALLY-HINDERED AROMATIC POLYCARBONATES

George R. Loucks, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 250,511, Apr. 2, 1981, Pat. No. 4,377,662.
This application Jul. 21, 1982, Ser. No. 400,497
Int. Cl.³ C08L 71/04, 69/00
U.S. Cl. 525—394 **6 Claims**

1. A process of forming a block copolymer of polyphenylene oxide and a sterically-hindered aromatic polycarbonate comprising the following process sequence:

(1) Forming an agitated two-phase mixture comprising,

(i) an organic phase containing a polyphenylene oxide, a sterically hindered aromatic dihydroxy compound, an inert organic solvent, a tertiary amine, and, optionally, a non sterically hindered aromatic dihydroxy compound,

(ii) an aqueous phase containing a solution of an alkali metal hydroxide having a pH value of at least 10,

(2) Adding and reacting a carbonyl halide with both the polyphenylene oxide and the sterically hindered aromatic dihydroxy compound plus any, optional non-sterically hindered aromatic dihydroxy compound to form a block copolymer, the quantity of said carbonyl halide being sufficiently large to react with all the aromatic dihydroxy compounds, and

(3) Recovering the polyphenylene oxide and sterically hindered aromatic polycarbonate block copolymer.

4,436,877

THERMOPLASTIC POLYESTER COMPOSITION

Takuzo Kasuga, Tokyo; Katsuhiko Takahashi, Fuji, and Tuneyasu Nakashima, Kawasaki, all of Japan, assignors to Polyplastics Co., Ltd., Japan

Filed Nov. 8, 1982, Ser. No. 440,132
Int. Cl.³ C08G 63/76
U.S. Cl. 525—437 **18 Claims**

1. A thermoplastic polyester composition comprising:

(a) a thermoplastic polyester resin which contains a moiety derived from an aromatic dibasic acid as a predominant acidic moiety, and

(b) a hydantoin compound in an amount sufficient to substantially retard evolution of aromatic dibasic acid vapor during melt processing of the composition.

11. A method of preventing mold deposits during a molding operation of a thermoplastic polyester resin containing an aromatic dibasic acid as a predominant acid moiety comprising the addition of 0.01–10 parts by weight of a hydantoin compound per 100 parts by weight of the polyester resin.

4,436,878

WATER-DISPERSIBLE BINDERS FOR CATIONIC ELECTROPAINTS, AND A PROCESS FOR THEIR PREPARATION

Wolfgang Batzill, Münster; Horst Diefenbach, Nottuln; Michael Geist, Münster, and Eberhard Schupp, Schwetzingen, all of Fed. Rep. of Germany, assignors to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

Filed Mar. 3, 1983, Ser. No. 471,739

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1982, 3210306

Int. Cl.³ C08L 63/00

U.S. Cl. 525—438 36 Claims

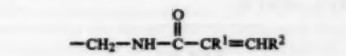
1. A water-dispersible binder which is intended for cationic electropaints and is based on reaction products which are formed from modified epoxy resins with primary and/or secondary amines and which can, if desired, also contain crosslinking agents, pigments, flow-control agents and other customary auxiliaries, which contains as reaction products those which have been prepared by reacting

(A) Low molecular weight epoxy resins which contain aromatic groups and have an epoxide equivalent weight of less than 375 with

(B) aliphatic and/or alicyclic polyfunctional alcohols or carboxylic acids having a molecular weight of less than 350 by addition to the epoxy group in such a way that the reaction products contain 10–45% of aromatic groups, calculated as phenylene group, and reacting the reaction products of A and B with

(C) if desired up to 60% by weight, relative to total binder, of polyfunctional alcohols, carboxylic acids and/or SH compounds having a molecular weight of 300–5,000, the molar ratios of (A), (B) and, if desired, (C) being chosen in such a way that the resulting intermediate product has terminal epoxy groups,

(D) by reacting the intermediate product by the addition of a phenolic hydroxyl group of a monophenol and/or diphenol to the epoxy groups, the monophenol or diphenol having as a substituent on the aromatic ring(s) at least one grouping of the formula



(I)

in which R^1 and R^2 are identical to or different from one another and represent hydrogen or a methyl group, with the proviso that primary and/or secondary amines have been added, before or after the reaction of the phenolic hydroxyl groups with the epoxy groups, to at least some of the groupings of the formula (I).

4,436,879

COPOLYESTER-CARBONATE BLENDS

Kenneth F. Miller, Mt. Vernon, and Edward Belfoure, New Harmony, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 27, 1982, Ser. No. 452,908

Int. Cl.³ C08L 69/00

U.S. Cl. 525—439 27 Claims

1. Thermoplastic compositions comprised of, in physical admixture:

(i) from about 1 to about 85 weight percent of at least one randomly branched aromatic polycarbonate resin derived from (a) at least one dihydric phenol, (b) a carbonate precursor, and (c) a minor amount of at least one branching agent selected from polyfunctional organic compounds containing at least three functional groups; and

(ii) from about 15 to about 99 weight percent of at least one copolyester-carbonate resin.

4,436,880

HEAT-CURABLE EPOXIDE RESIN COMPOSITIONS

Edward Irving, Burwell, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 1, 1983, Ser. No. 462,820

Claims priority, application United Kingdom, Feb. 11, 1982, 8204053

Int. Cl.³ C08G 59/72, 59/68

U.S. Cl. 525—504 10 Claims

1. A heat-curable composition, substantially free from any unsaturated polymerisable material, comprising

(a) an epoxide resin containing more than one 2,3-epoxypropyl group per average molecule,

(b) a latent hardener for epoxide resins that is a boron trifluoride-amine complex, and

(c) an organic oxidant selected from quinones, peroxides, and iodosoaromatic compounds.

4,436,881

POLYURETHANE BINDER COMPOSITIONS

Robert A. Laitar, Woodridge, Ill., assignor to Acme Resin Corporation, Forest Park, Ill.

Filed Jun. 29, 1983, Ser. No. 508,781

Int. Cl.³ C08G 18/06, 18/08, 18/28

U.S. Cl. 525—504 33 Claims

1. In a binder composition comprising a polyhydroxy component, an isocyanate component having a functionality of two or more and sufficient catalyst to catalyze substantially completely the reaction between the polyhydroxy component and the isocyanate component wherein the improvement comprises including in the composition an additive selected from the group consisting of dichloroarylphosphines, chlorodiarylphosphines, arylphosphonic dichlorides, diarylphosphinyl chlorides, and mixtures thereof, said additive being present in an amount equal to from about 0.02% to about 3% by weight of the isocyanate component.

4,436,882

POLYMERIZATION PROCESS UTILIZING A CATALYST PREPARED BY AGING OF A CHROMIUM-CONTAINING GEL AT HIGH PH

Donald R. Witt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 340,938, Jan. 20, 1982, Pat. No. 4,405,501. This application Sep. 27, 1982, Ser. No. 423,593

Int. Cl.³ C08F 4/02, 4/24

U.S. Cl. 526—106 28 Claims

1. A polymerizatiion process comprising:

contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule in a reaction zone under polymerization conditions with a catalyst prepared by a process comprising:

forming a co-gelled silica-chromium hydrogel;

aging said hydrogel for a time of at least one hour at a pH within the range of 7 to 9;

thereafter treating said hydrogel with a volatile liquid organic compound to remove water and thus convert said hydrogel to a xerogel; and

activating the thus formed xerogel; and

recovering a polymer.

18. A polymerization process comprising:

contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule in a reaction zone under polymerization conditions with a catalyst prepared by a process comprising:

forming a silica, titania, chromium tergel hydrogel, said chromium coming from a coordination chromium compound having a nitrogen-containing group;

aging said hydrogel for at least one hour;

thereafter treating said hydrogel with a volatile liquid organic compound to remove water and thus convert said hydrogel to a xerogel; and

activating the thus formed xerogel; and
recovering a polymer.

4,436,883

POLYMERIZATION USING A SUPPORT FORMED BY HEATING SILICA GEL IN INERT ATMOSPHERE

Donald R. Witt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 340,937, Jan. 20, 1982, Pat. No. 4,392,990. This application Sep. 27, 1982, Ser. No. 423,600

Int. Cl.³ C08F *4/02, 4/24*

U.S. Cl. 526—106 **25 Claims**

1. A polymerization process comprising:
contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule in a reaction zone under polymerization conditions with a catalyst produced by a process comprising:
(a) forming a silica hydrogel;
(b) aging said hydrogel for a time of at least one hour;
(c) treating the thus aged hydrogel with a volatile liquid saturated aliphatic alcohol having a solubility in water of less than 6 grams per 100 grams of water to convert said hydrogel to a xerogel;
(d) subjecting the thus formed xerogel to a heat treatment in an inert atmosphere at an elevated temperature;
(e) activating the thus heat treated xerogel, said xerogel also containing chromium, in an oxygen-containing ambient for a time sufficient to activate same; and recovering a polymer.

4,436,884

PROCESS FOR POLYMERIZING CONJUGATE DIOLEFINS, AND MEANS SUITABLE FOR THIS PURPOSE

Antonio Carbonaro, Milan, and Luciano Ripani, S. Donato Milanese, both of Italy, assignors to Enoxy Chimica, S.p.A., Sassari, Italy

Filed Apr. 14, 1983, Ser. No. 484,955

Claims priority, application Italy, Apr. 15, 1982, 20747 A/82

Int. Cl.³ C08F *4/52*

U.S. Cl. 526—111 **14 Claims**

1. A catalytic system for polymerising conjugate diolefins, prepared from:
(a) at least one of the elements pertaining to Group III B of the periodic system;
(b) at least one aluminium compound of formula AlR_2R' where R is alkyl, cycloalkyl or alkylaryl, and R' is R or H;
(c) at least one organic halogen derivative or a halide of an element able to exist in at least two valency states, the halide corresponding to a state higher than the minimum;
(d) at least one compound containing one or more salifiable hydroxyl groups such as water, carboxylic alcohols or carboxylic acids.

4,436,885

PREPARATION OF ISOCYANATE-FUNCTIONAL POLYMERS CONTAINING A TERMINAL MONOSULFIDE GROUP

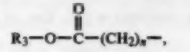
Darryl W. Brixius, Grosse Ile, Mich., and John A. Simms, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 195,081, Oct. 8, 1980, Pat. No. 4,351,755, which is a continuation-in-part of Ser. No. 53,301, Jun. 29, 1979, abandoned, which is a division of Ser. No. 819,121, Jul. 26, 1977, abandoned. This application Dec. 7, 1981, Ser. No. 328,114

Int. Cl.³ C08F *2/06, 2/38*

U.S. Cl. 526—214 **28 Claims**

1. The process of preparing a polymer of a number average molecular weight of 500–10,000 which comprises reacting
at least one isocyanatoalkyl acrylate or methacrylate alone or with
at least one comonomer of the group consisting of alkyl acrylates and methacrylates; styrene; ethylene, vinyl acetate; and vinyl chloride
in an organic solvent and in the substantial absence of water and Lewis-type bases and
in the presence of
(1) a mercaptan chain-transfer agent of the formula R-S-H wherein R is of at least 4 carbons and is alkyl, aryl or



R_3 being alkyl or aryl and n being an integer from 0 to 8, and
(2) an organic polymerization initiator,
the mole ratio chain-transfer agent/initiator being from 1/10 to 10/1 and the temperature being sufficient to decompose the initiator but insufficient to favor the production of a thiourethane.

4,436,886

2-PHENYLBANZOTHIAZOLE POLYMERS

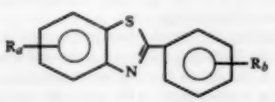
Tsu-Tzu Tsai, Dayton, and Fred E. Arnold, Centerville, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 356,577, Mar. 9, 1982, abandoned. This application Feb. 2, 1983, Ser. No. 463,192

Int. Cl.³ C08F *26/06, 28/06*

U.S. Cl. 526—257 **10 Claims**

1. A 2-phenylbenzothiazole resin formed by the thermal, self-polymerization of a 2-phenylbenzothiazole monomer having at least one terminal acetylene group of the formula



wherein R_a and R_b are —H or —C≡CH, wherein at least one of R_a or R_b is —C≡CH.

4,436,887

N-VINYL LACTAM BASED BIOMEDICAL DEVICES

Richard C. Chromecek, Macedon; Gary D. Friends, Ontario; Lawrence Y. Wissman, and Raymond A. Yourd, III, both of Rochester, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,355

Int. Cl.³ C08F *226/06, 226/08*; G03B *21/46*

U.S. Cl. 526—263 **27 Claims**

1. As a new article of manufacture, a contact lens formed from a hydrophilic polymer formed by polymerizing (a) (1) one or more N-vinyl lactams and/or heterocyclic N-vinyl monomers, said N-vinyl lactams being selected from the group consisting of N-vinyl-2-pyrrolidinone, N-(1-methyl) vinyl pyrrolidinone, N-vinyl-2-piperidone and N-vinyl-2-caprolactam which may be substituted in the lactam ring by one or more lower alkyl groups, said heterocyclic N-vinyl monomers being selected from the group consisting of N-vinyl imidazole, N-vinyl succinimide, N-vinyl diglycolylimide, N-vinyl glutarimide, N-vinyl-3-morpholinone and N-vinyl-5-methyl-3-morpholinone, and (2) from zero to 50 weight percent of the total monomer present is at least one hydrophobic monomer or hydrophilic monomer other than N-vinyl lactam and/or heterocyclic N-vinyl monomer, said hydrophobic monomer(s) being selected from the group consisting of acrylates, methacrylates, itaconates, fumarates, maleates and crotonates wherein the esterified group has from 1 to 30 carbon atoms, said hydrophilic monomer(s) being selected from the group consisting of hydroxyesters, free acids, amides and amines of acrylates,

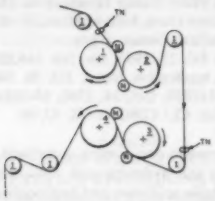
methacrylates and itaconates, and (b) a resonance free di(alkene tertiary amine) cyclic compound crosslinking agent alone or in admixture with a crosslinking agent of another chemical structure in which case said cyclic compound is at least 50 mole percent of said mixture, said cyclic compound having the formula $CH_2{:}CG(CH_2)_xN{\sim}J{\sim}N(CH_2)_xCH{:}CH_2$ wherein x is 0 or 1, G is hydrogen or methyl and J is the balance of structure forming cyclic dialkene urea, said agent being present in an amount from 0.01 to 10 weight percent of the total monomer of (A) (1) and (A) (2) present to form a crosslinked 3-dimensional polymeric network, said polymer having an oxygen permeability of at least 24×10^{-11} $cm^2cm/(sec.cm^2mmHg)$ and a tear initiation strength of at least 3 g/mm of thickness.

4,436,888

METHOD FOR MAKING BALANCED LOW SHRINK TENSION POLYOLEFIN FILM

Kerry J. Copple, Webster, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 5, 1982, Ser. No. 432,836
Int. Cl.³ C08F *110/02*; B29C *17/02*
U.S. Cl. 526—348.1 **7 Claims**



1. A method for making a biaxially oriented polyolefin film with substantially balanced shrinkage of at least 7 percent at 110° C. and a substantially balanced shrink force of not more than 2.2 MPa as measured at 110° C., said method comprising the sequential steps of:

(a) heating a biaxially oriented polyolefin heat-shrinkable film to a temperature of from 124°–138° C.,

(b) stretching the heated film resulting from step (a) in the longitudinal direction by a factor from 1.05 to 1.20,

(c) cooling the stretched film resulting from step (b) to a temperature of not greater than 55° C. while maintaining the degree of stretch created in step (b),

(d) heating the cooled film resulting from step (c) to a temperature of from 124°–138° C.,

(e) relaxing the heated film resulting from step (d) in the longitudinal direction by a factor of from 0.83 to 0.95, and

(f) cooling the relaxed film resulting from step (e) to a temperature of not greater than 55° C. while maintaining the degree of relaxation created in step (e).

7. The product produced by the process of claim 1.

4,436,889

PREPARATION OF CARBOXYLIC ACIDS BY CARBONYLATION OF ALCOHOLS

Jean Gauthier-Lafaye, Lyons, and Robert Perron, Charly, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed May 5, 1981, Ser. No. 260,810
Claims priority, application France, May 6, 1980, 80 10540
Int. Cl.³ C07C *51/12*, *53/08*, *53/134*, *57/30*, *57/32*
U.S. Cl. 562—519 **21 Claims**

1. A process for the preparation of a carboxylic acid having the structural formula R^1COOH, wherein R^1 is a linear, branched or cyclic chain alkyl radical of from 1 to 6 carbon atoms or a phenyl-C_nH_{2n}-radical wherein $1 \leq n \leq 6$, comprising carbonylating an alcohol having the formula R^1—OH with carbon monoxide in liquid phase, in the presence of a catalytically effective amount of nickel and an alkyl or acyl halide promoter therefor, at a temperature of at least 120° C. and under and total pressure of less than 200 bars, said carbonylation being carried out in the presence of at least one vanadium compound in which the vanadium is in an oxidation state of 4 or 5, and in an initial carboxylic acid reaction medium having the formula R^2—COOH, wherein R^2 is defined as was R^1 above, and further wherein R^1 and R^2 may be the same or different.

4,436,890

AROMATIC UREA-BASED CURING AGENT SYSTEM FOR EPOXY RESIN COATING COMPOSITIONS

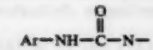
Marvin L. Kaufman, Bridgewater, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,787
Int. Cl.³ C08G *59/44*, *59/68*
U.S. Cl. 528—93 **25 Claims**

1. A stable, heat curable coating composition consisting essentially of:

(a) a polyepoxide having a plurality of 1,2-epoxy groups and an epoxy equivalency greater than 1.0;

(b) an aromatic urea containing the moiety



wherein Ar is substituted or unsubstituted, mononuclear or polynuclear aromatic, said aromatic urea being present in amounts sufficient to provide an effective amount of a coreactive amine curing agent for said polyepoxide upon reaction of said aromatic urea with a portion of said polyepoxide when said composition is maintained under curing conditions which include a temperature of at least about 70° C., and

(c) a condensation-type catalyst present in an amount effective to promote the reaction of said aromatic urea with a portion of said polyepoxide at a temperature of at least about 70° C.;

said composition being substantially free of coreactive amounts of amine and polycarboxylic acid anhydride curing agents at temperatures below about 70° C.

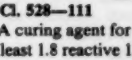
4,436,891

MODIFIED POLYOXYALKYLENEPOLYAMINE CURING AGENTS FOR EPOXY RESINS

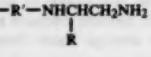
Arihiko Umeda, and Yoshiyuki Iwase, both of Tokyo, Japan, assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 7, 1982, Ser. No. 415,059
Claims priority, application Japan, Sep. 14, 1981, 56-144023
Int. Cl.³ C08G *59/50*
U.S. Cl. 528—111 **10 Claims**

1. A curing agent for vicinal epoxy resins having an average of at least 1.8 reactive 1,2-epoxy groups per molecule comprising the reaction product of an alkyleneimine of the formula:



wherein R is hydrogen or C_1–C_5 alkyl with a polyoxyalkylenepolyamine, wherein the curing agent is defined by the formulas:



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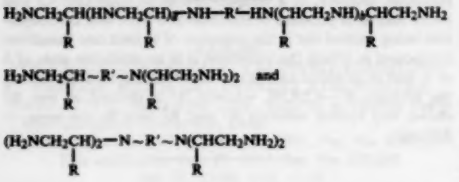


wherein R' is polyoxyalkylene, a+b ranges from 1 to 20 and R is hydrogen or C_1–C_5 alkyl.

4,436,892

IMIDAZOLIDES

Helmut Zondler, Bottmingen; Friedrich Lohse, Oberwil, and Roland Moser, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 6, 1982, Ser. No. 447,344

Claims priority, application Switzerland, Dec. 15, 1981, 7992/81

Int. Cl.³ C08G *59/54, 59/44*

U.S. Cl. 528—117 **10 Claims**

1. An imidazolide of the formula I

(I)

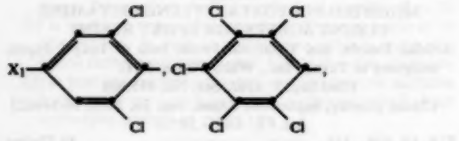
wherein

R_1 is hydrogen, C_1–C_{12}-alkyl or phenyl, and R_2 is hydrogen, or

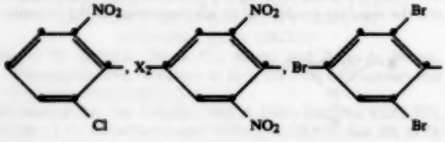
R_1 is ethyl, and R_2 is methyl, or

R_1 is hydrogen, and R_2 is phenyl or methyl, and

R_3 is a group of any one of the formulae II–VI



(II) (III)



(IV) (V) (VI)

wherein X_1 is hydrogen, chlorine or NO_2, and X_2 is hydrogen or NO_2.

8. A curable mixture containing an imidazolide of the formula I according to claim 1, which mixture contains also a polyepoxide compound having on average more than one epoxide group in the molecule.

4,436,893

COPOLYESTER OF POLYETHYLENE TEREPHTHALATE AND SULFONYL DIPHENOL

Michael S. Cholod, Cornwells Heights, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 25, 1982, Ser. No. 436,228

Int. Cl.³ C08G *63/18, 63/68*

U.S. Cl. 528—173 **18 Claims**

1. A copolyester of polyethylene terephthalate capable of being molded into clear articles comprising from about 2 to about 20 mole percent sulfonyl diphenol, isomers and mixtures thereof, and from about 98 to about 80 mole percent ethylene terephthalate prepolymer.

4,436,894

NOVEL WHOLLY AROMATIC COPOLYESTER, PROCESS FOR PRODUCTION THEREOF, AND FILM MELT-SHAPED THEREFROM

Takanori Urasaki, Hino; Yasuji Hirabayashi, Hachioji; Tugusi Yoshida, and Hiroo Inata, both of Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jul. 27, 1981, Ser. No. 286,855

Claims priority, application Japan, Jul. 31, 1980, 55-104361; Oct. 23, 1980, 55-147548; Oct. 24, 1980, 55-148143

Int. Cl.³ C08G *63/18, 63/60*

U.S. Cl. 528—176 **23 Claims**

1. A wholly aromatic copolyester composed mainly of isophthalic acid units and hydroquinone units, the total proportion of said isophthalic acid units and hydroquinone units being at least about 80 mole% based on the entire units, said wholly aromatic copolyester having a terminal carboxyl group concentration, measured by dissolving the wholly aromatic copolyester in a mixed solvent of phenol and tetrachloroethane in a weight ratio of 4:6 and titrating the resulting solution with a benzyl alcohol solution of sodium hydroxide using bromocresol green as an indicator, of not more than about 90 eq/10^6 g and a reduced viscosity, determined at 35° C. in a mixed solvent of phenol and tetrachloroethane in a weight ratio of 4:6 in a concentration of 1.2 g/dl of at least about 0.6 and being substantially linear and melt-shapable and substantially free from a halogen atom bonded to the molecular chain.

4,436,895

POLYESTER CONTAINERS HAVING IMPROVED GAS BARRIER PROPERTIES

Robert B. Barbee, and Burns Davis, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 13, 1983, Ser. No. 484,401

Int. Cl.³ C08G *63/44, 63/68*

U.S. Cl. 528—288 **11 Claims**

1. A container formed from a polyester resin comprising the reaction product of

(A) a diol containing up to about 8 carbon atoms, and

(B) a diacid component comprising

(i) terephthalic acid and

(ii) a second diacid selected from iminodiacetic acid, oxydiacetic acid, thiodiacetic acid, and mixtures thereof, wherein said second diacid is present in a concentration of about 1 to 50 mole percent, based upon the total amount of diacid, and wherein said polyester resin has an inherent viscosity of about 0.5 to 1.5.

4,436,896

POLYESTER COPOLYMER

Ichiro Okamoto, and Yuzo Toga, both of Himeji, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 14, 1982, Ser. No. 418,120

Claims priority, application Japan, Sep. 29, 1981, 56-154275; Sep. 29, 1981, 56-154276; Oct. 8, 1981, 56-161509; Oct. 8, 1981, 56-161510

Int. Cl.³ C08G 63/66

U.S. Cl. 156—332 4 Claims

1. A polyester copolymer obtained by copolymerizing

(A) terephthalic acid or a mixture of not less than 50 mol % of terephthalic acid and at least one kind of dicarboxylic acid selected from aromatic dicarboxylic acids excluding terephthalic acid and aliphatic dicarboxylic acids, said terephthalic acid and dicarboxylic acid optionally forming an ester-forming derivative thereof,

(B) a low-molecular weight diol composed of 1 to 50 mol % of 2-methyl-1,3-propanediol and 99 to 50 mol % of 1,6-hexanediol, and

(C) at least one kind of high-molecular weight diol (in such an amount that the high-molecular weight diol component in the copolymer is 0 to 60 wt %) selected from polyalkylene ether glycol and polycaprolactone glycol.

4. A method of bonding an article to another article by using the polyester copolymer as defined in any of claims 1, 2 and 3, as an adhesive.

4,436,897

PREPARATION OF POLYCAPROLACTAM WITH AQUEOUS EXTRACT CONTAINING CAPROLACTAM AND CAPROLACTAM OLIGOMERS

Hugo Strehler, Frankenthal; Werner Hoerauf, Ludwigshafen, and Friedrich Urbanek, Schifferstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 24, 1982, Ser. No. 410,881

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1981, 3134717

Int. Cl.³ C08G 69/16

U.S. Cl. 528—323 2 Claims

1. A process for the preparation of fiber-forming polycaprolactam comprising polymerizing a composition comprising ϵ-caprolactam and an aqueous extract containing caprolactam and caprolactam oligomers, which extract has been obtained by extracting polycaprolactam with water, wherein such aqueous extract contains from 0.1 to 5.0% by weight of oligomers of caprolactam, based on teh monomeric caprolactam contained in the aqueous extract.

4,436,898

PREPARATION OF SPINNABLE POLYAMIDE FROM DINITRILE, DIAMINE, H_2O WITH P CONTAINING CATALYST

Hansdieter Hofmann, Karben; Hans-Jochen Rothe, Maintal; Georg Skupin, Bruchkobel, and Konrad Wolff, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Davy McKee Aktiengesellschaft, Borsigalle, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 370,271, Apr. 20, 1982, abandoned, which is a continuation-in-part of Ser. No. 264,982, May 18, 1981, abandoned. This application May 10, 1982, Ser. No. 375,971

Int. Cl.³ C08G 69/00

U.S. Cl. 528—336 28 Claims

1. A method for the production of a spinnable polyamide comprising contacting a dinitrile, an aliphatic diamine, excess water and a catalytic amount of an oxygen containing phosphorous compound in a reaction vessel.

4,436,899

LAYERED ORGANOPHOSPHORUS INORGANIC POLYMERS

Peter M. DiGiacomo, Mission Viejo, and Martin B. Dines, Santa Ana, both of Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Continuation-in-part of Ser. No. 945,971, Sep. 26, 1978, Pat. No. 4,232,146. This application Jul. 24, 1979, Ser. No. 60,076

The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.

Int. Cl.³ C08G 79/04, 79/14

U.S. Cl. 528—395 4 Claims

1. A process for the production of phosphorus-containing organo substituted inorganic polymers which comprises reacting in a liquid medium at least one organophosphorous or organophosphoric acid compound of the formula:

$$[(HO)_2OP]_nR \text{ or } [(HO)_2OPO]_nR$$

wherein n is 1 or 2 and R is an organo group covalently coupled to phosphorus and wherein when n is 2, R contains at least two carbon atoms and is directly or indirectly coupled to the phosphorus atoms through different carbon atoms whereby the two phosphorus atoms are separated by at least two carbon atoms, with at least one tetravalent metal ion to precipitate, from the liquid medium, a solid inorganic polymer in which the molar ratio of phosphorus to tetravalent metal is about 2 to 1 and in which the organo group is covalently bonded to phosphorus and phosphorus is linked to the tetravalent metal through oxygen.

4,436,900

PROCESS FOR DEACTIVATING POLYMERIZATION CATALYST

Kazuhiko Matsuzaki; Toshiyuki Iwaisako, and Junzo Masamoto, all of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 28, 1983, Ser. No. 479,385

Claims priority, application Japan, Mar. 29, 1982, 57-48990

Int. Cl.³ C08G 2/28

U.S. Cl. 528—490 13 Claims

1. A process for deactivating a cationic polymerization catalyst for the production of an oxymethylene copolymer from trioxane and a cyclic ether and/or a cyclic formal in the presence of the cationic polymerization catalyst which comprises contacting a deactivating agent in the state of gas phase with the copolymer produced at a temperature not causing degradation of the copolymer produced.

4,436,901

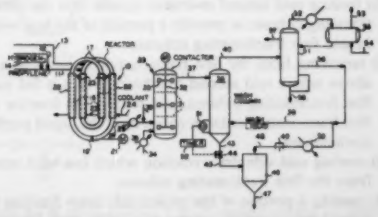
HYDROCARBON WASH LIQUID FOR CATALYST SEPARATION

Fred T. Sherk, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 22, 1982, Ser. No. 350,851

Int. Cl.³ C08F 6/10, 6/06

U.S. Cl. 528—498 5 Claims



1. In a continuous propylene mass polymerization wherein

liquid propylene is contacted in a polymerization zone with a suitable catalyst in the presence of propane under conditions so as to form solid polymer, effluent from said polymerization zone comprising propylene and propane is contacted in a wash column with a wash liquid to separate catalyst residues therefrom, used wash liquid from the wash column is subjected to fractionation to recover propylene therefrom, washed polymer is recovered from the wash column and passed to a flashing zone wherein liquid is flashed from the solid polymer, the improvement comprising passing overhead vapors comprising propylene and propane from the flash zone to a condensing zone wherein said vapors are condensed to a liquid having substantially the same hydrocarbon composition as the overhead vapors from the flash zone and passing at least a portion of the liquid obtained from the condensing zone to the wash zone where said liquid serves as at least a portion of the wash liquid supply and a fractionation sidestream comprising propylene and propane is also employed as wash liquid.

4,436,902

REMOVAL OF CONTAMINANTS IN LIQUID PURIFICATION

William E. Wood, and Franklin T. Barber, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 12, 1982, Ser. No. 348,379
Int. Cl.³ C08F 6/08
U.S. Cl. 528—501 **12 Claims**

1. A process for purifying a liquid to be purified which contains contaminants, comprising:

(a) passing a feedstream comprising the liquid to be purified and a contaminant to a first fractionating column,

(b) separating in said first fractionating column said feedstream into a first overhead fraction, a side draw fraction, and a first bottom fraction,

(c) removing from said first fractionating column, said first overhead fraction comprising a contaminant having a volatility greater than that of the liquid to be purified,

(d) feeding to a second fractionating column, said first bottom fraction of the first fractionating column, said first bottom fraction comprising a contaminant having a volatility less than or equal to the volatility of the liquid to be purified and comprising a portion of the liquid to be purified,

(e) separating in said second fractionating column said first bottom fraction of the first fractionating column into a second overhead fraction and a second bottom fraction

(f) removing from the process, said second bottom fraction of the second fractionating column comprising substantially a contaminant,

(g) removing from said second fractionating column, said second overhead fraction comprising the liquid to be purified in a vapor phase,

(h) feeding said second overhead stream into the first fractionating column to provide a portion of the heat required in said first fractionating column,

(i) removing from the first fractionating column, at a point above where said second overhead stream is fed into the first fractionating column, said side stream fraction of the first fractionating column comprising the liquid purified of contaminant,

(j) cooling said side draw fraction which has been removed from the first fractionating column,

(k) passing a portion of the cooled side draw fraction to the second fractionating column as a reflux-type stream,

(l) recovering a portion of the cooled side draw fraction as purified liquid product.

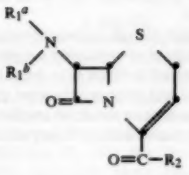
4,436,903

PROCESS FOR THE PRODUCTION OF 7 β-SUBSTITUTED-3-UNSUBSTITUTED-3-CEPHEM-4-CARBOXYLIC ACID COMPOUNDS

Gottfried Sedelmeier, Ehrenkirchen-Norsingen, Fed. Rep. of Germany, and Riccardo Scartazzini, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

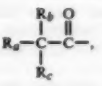
Filed Dec. 11, 1981, Ser. No. 329,916
Claims priority, application Switzerland, Dec. 22, 1980, 9468/80
Int. Cl.³ C07D 501/04
U.S. Cl. 544—016 **19 Claims**

1. A process for the production of a 7β-amino-3-cephem-4-carboxylic acid compound of the formula



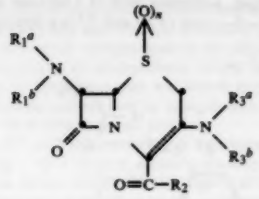
(I)

wherein R_1^a is hydrogen, an acyl group of the formula:



(IA)

wherein (1) R_a is phenyl, hydroxyphenyl, lower alkylsulfonylaminophenyl, aminomethylphenyl, 2- or 3-thienyl, aminomethylthienyl, furyl, aminomethylfuryl, cyclohexadienyl, aminomethyl-1,4-cyclohexadienyl, cyclohexenyl, aminomethyl-1-cyclohexenyl, aminothiazolyl, lower alkylaminothiazolyl, aminothiadiazolyl, or lower alkylaminothiadiazolyl, in which the hydroxy and amino groups are in the free form or are protected by conventional hydroxy- and amino protecting groups, R_b is hydrogen, and R_c is hydrogen, amino or amino protected by a conventional amino protecting group, hydroxy, hydroxy protected by a conventional hydroxy protecting group, carboxy, lower alkoxycarbonyl, or sulfo, or wherein (2) R_a is 3-amino-3-carboxypropyl or 3-amino-3-carboxypropyl in which amino and carboxy are protected by conventional amino and carboxy protecting groups, cyano, 1-tetrazolyl, phenoxy, or 4-pyridylthio, and R_b and R_c are hydrogen, or wherein (3) R_a is phenyl, thienyl, 2-furyl, 2-amino-4-thiazolyl, 2-lower alkylamino-4-thiazolyl, 5-amino-1,2,4-thiadiazolyl or 5-lower alkylamino-1,2,4-thiadiazolyl wherein amino can be protected by a conventional amino protecting group, and R_b and R_c together are syn-lower alkoximino, or is an amino protective group R_1^d selected from the group consisting of trityl, 1-lower alkoxycarbonyl-1-propen-2-yl, 2-nitrophenylthio, pentachlorophenylthio, tritylthio, tri-lower alkylsilyl, halo-lower alkoxy-lower alkylsilyl and tri-lower alkylsilyl, R_1^b is hydrogen, or R_1^a and R_1^b together ar a bivalent amino protecting group selected from the group consisting of succinyl, phthaloyl and 4,4-dimethyl-2-phenyl-1-oxo-3-aza-1,4-butylene, and R_2 is hydroxy, or a group which, together with the carbonyl grouping —C(=O)— forms a conventionally protected carboxy group, which comprises reacting a compound of the formula



(II)

wherein n is 0 or 1, R_1^a, R_1^b and R_2 are as defined for formula I, and the group of the formula $—N(R_3^a)(R_3^b)$ is a secondary amino group wherein one of the groups R_3^a and R_3^b represents hydrogen and the other lower alkyl, lower alkyl substituted by lower alkoxy, lower alkylthio, cycloalkyl, phenyl or thienyl, cycloalkyl, or cycloalkyl substituted by lower alkoxy or lower alkylthio, or $—N(R_3^a)(R_3^b)$ represents a tertiary amino group wherein R_3^a and R_3^b are the same or different and represent lower alkyl, lower alkyl substituted by lower alkoxy, lower alkylthio, cycloalkyl, phenyl or thienyl, cycloalkyl or cycloalkyl substituted by lower alkoxy or lower alkylthio or R_3^a and R_3^b can be linked with a carbon-carbon bond or with an oxygen or sulfur atom, —NH—, or a lower alkylated nitrogen atom under acid conditions with a complex borohydride.

4,436,904

CEPHALOSPORINS

Shigeo Shimizu; Hiroyuki Takano, both of Yufutsu; Shoji Yoshimura, Iruma, and Kinji Takada, Tokyo, all of Japan, assignors to Kanto Ishi Pharmaceutical Co., Ltd., Tokyo, Japan

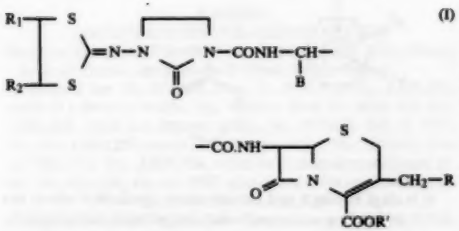
Filed Jan. 6, 1982, Ser. No. 337,380

Claims priority, application Japan, Feb. 14, 1981, 56-20347; Feb. 14, 1981, 56-20348

Int. Cl.³ C07D *501/56*

U.S. Cl. 544—27 **11 Claims**

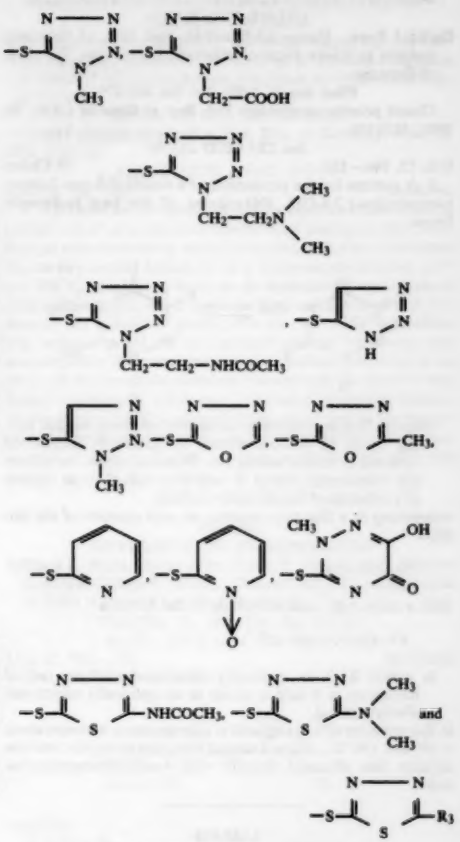
1. A novel cephalosporin represented by the following formula:



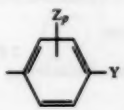
(I)

wherein R is hydrogen, acyloxy of formula $R_4COO—$, in which R_4 is alkyl of 1 to 4 carbon atoms; carbamoyloxy, a pyridinium radical of formula

in which R_6 is hydrogen, alkyl having 1 to 4 carbon atoms, carboxy, lower alkoxy, carbamoyl, halogen or sulfamoyl or a group —S—Het in which Het is



in which R_3 is hydrogen or alkyl having 1 to 4 carbon atoms, R' is hydrogen, alkali metal, an organic amine or an ester moiety, R_1 and R_2 are the same or different and are hydrogen or lower alkyl and B stands for a 1,4-cyclohexadienyl group, a group



in which Y is hydrogen, —OH or

in which R_5 is alkyl having 1 to 5 carbon atoms, or alkoxy having 1 to 4 carbon atoms, Z is hydrogen or halogen and p is an integer of 1 or 2, a furan group or a thiophene group.

4,436,905

PREPARATION OF 4-METHYL-5-OXO-3-THIOXO-TETRAHYDRO-1,2,4,-(2H,4H)-TRIAZINES

Gerhard Bonse, Wuppertal-Elberfeld, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

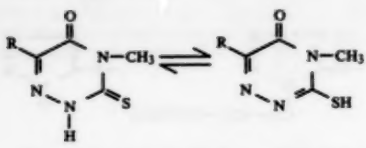
Filed Aug. 9, 1982, Ser. No. 406,679

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1981, 3134230

Int. Cl.³ C07D *253/06*

U.S. Cl. 544—182 19 Claims

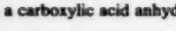
1. A process for the production of a 4-methyl-5-oxo-3-thioxo-tetrahydro-1,2,4-(2H, 4H)-triazine of the two tautomeric forms



wherein R is an optionally substituted aliphatic radical having up to 12 carbons atoms, an optionally substituted cycloalkyl radical having 3 to 10 carbon atoms, an optionally substituted phenyl or naphthyl radical or an optionally substituted heterocyclic radical,

comprising in a first step reacting an acyl cyanide of the formula

with a carboxylic acid anhydride of the formula



in which R^1 is an optionally substituted aliphatic radical having up to 8 carbon atoms or an optionally substituted phenyl radical,

in the presence of a strong acid at a temperature between about −50° and 150° C., and in a second step contacting the reaction mixture thus obtained directly with 4-methylthiosemicarbazide.

4,436,906

ANTHRAQUINONE DYES FOR CELLULOSE-CONTAINING FIBERS AND PROCESS FOR PRODUCING THE SAME

Toshio Niwa, and Toshio Hihara, both of Kanagawa, Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

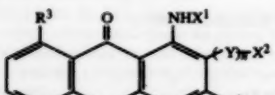
Filed May 20, 1982, Ser. No. 380,320

Claims priority, application Japan, May 20, 1981, 56-75974; Jul. 20, 1981, 56-113258; Jul. 24, 1981, 56-116015; Jul. 27, 1981, 56-117472

Int. Cl.³ C07D *251/42*

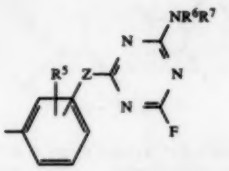
U.S. Cl. 544—187 2 Claims

1. An anthraquinone dye for cellulose-containing fibers having the formula (I):



(I)

wherein R^1 is $—NH_2$ or a hydroxyl group; R^2 is a hydrogen atom, a chlorine atom, a bromine atom, a cyano group or $—SO_2R$ (wherein R is a lower alkyl group or a phenyl group); R^3 and R^4 are each a hydrogen atom, $—NH_2$, a hydroxyl group, a nitro group, a chlorine atom or a bromine atom; Y is either —O— or —S—; one of X^1 and X^2 is a hydrogen atom and the other is



(wherein Z is either —O— or —S—; R^5 is a lower alkyl group, a lower alkoxy group or a hydrogen atom; R^6 and R^7 are each a hydrogen atom or an alkyl group, an alkenyl group, a cyclohexyl group, an aryl group or an aralkyl group which may be substituted by a cyano group, a hydroxyl group, a lower alkoxy group or a dialkylamino group, or NR^6R^7 represents a 5- or 6-membered nitrogen-containing heterocyclic ring formed by the bonding of R^6 and R^7 such that when R^6 and R^7 are taken together to form a heterocyclic ring, the nitrogen of the heterocyclic ring to which R^6 or R^7 are bonded is the nitrogen N of NR^6R^7; the sum of the carbon atoms of R^6 and R^7 is not more than 18); and n is 0 or 1, but n is 0 when X^2 is a hydrogen atom.

4,436,907

BENZYL-PYRIMIDINYLALKYL-ETHERS AS PLANT GROWTH REGULATORS AND FUNGICIDES, AND CORRESPONDING PYRIMIDINYL-CARBINOLS

Graham Holmwood, Wuppertal; Klaus Lürssen, Berg.-Gladbach, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

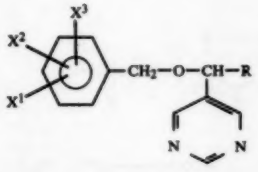
Filed Jan. 28, 1982, Ser. No. 344,261

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1981, 3105374

Int. Cl.³ C07D *239/26*

U.S. Cl. 544—335 8 Claims

1. A benzyl-pyrimidinylalkyl-ether of the formula



in which

R is alkyl having 1 to 8 carbon atoms; cycloalkyl which has 3 to 7 carbon atoms and which is optionally substituted by alkyl having 1 to 4 carbon atoms; or phenyl which is optionally substituted by halogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms and/or halogenoalkyl having 1 to 2 carbon atoms and 1 to 5 halogen atoms,

X^1 is hydrogen, halogen, alkyl having 1 to 4 carbon atoms, cycloalkyl having 3 to 7 carbon atoms, alkoxy having 1 to 4 carbon atoms, alkylthio having 1 to 4 carbon atoms, halogenoalkyl having 1 to 4 carbon atoms and 1 to 5 halogen atoms, halogenoalkoxy having 1 to 4 carbon atoms and 1 to 5 halogen atoms, halogenoalkylthio having 1 to 4 carbon atoms and 1 to 5 halogen atoms, phenyl which is optionally substituted by halogen and/or by alkyl having 1 to 4 carbon atoms, phenoxy which is optionally

substituted by halogen and/or by alkyl having 1 to 4 carbon atoms, phenylalkyl which has 1 to 4 carbon atoms in the alkyl part and which is optionally substituted in the phenyl part by halogen and/or by alkyl having 1 to 4 carbon atoms, or phenylalkoxy which has 1 to 4 carbon atoms in the alkoxy part and which is optionally substituted in the phenyl part by halogen and/or by alkyl having 1 to 4 carbon atoms, and

X^2 and X^3 each independently is hydrogen, halogen, alkyl having 1 to 4 carbon atoms, cycloalkyl having 3 to 7 carbon atoms, alkoxy having 1 to 4 carbon atoms, alkylthio having 1 to 4 carbon atoms or halogenoalkyl, halogenoalkoxy or halogenoalkylthio each having 1 to 5 carbon atoms and 1 to 5 halogen atoms,

or an acid addition salt or metal salt complex thereof.

4,436,908

HETEROSULFONAMIDES

Ljerka Jozic, Hanover, Fed. Rep. of Germany, assignor to Johann A. Wuelfing, Fed. Rep. of Germany

Continuation of Ser. No. 148,139, May 9, 1980, abandoned. This application Mar. 12, 1982, Ser. No. 357,469

Claims priority, application United Kingdom, May 16, 1979, 7917035

Int. Cl.³ C07D *211/24, 207/09*

U.S. Cl. 546—206 **5 Claims**

1. A compound of the formula (I) having anti-arrythmic activity of low acute toxicity:

$$R_2N—(CH_2)_n—NH—SO_2R^1 \quad (I)$$

characterized in that NR_2 represents a piperidyl, pyrrolidyl, or N-methylpiperazyl group any of which may be substituted by one or two methyl groups; R^1 is a 1-naphthyl group optionally substituted by one or more moieties selected from fluorine, chlorine, bromine, methoxyl, ethoxyl, acetoxyl, nitro, cyano, amino optionally substituted by one or two C_{1-6} alkyl groups, methyl, ethyl, carboxyl, methoxycarbonyl, ethoxycarbonyl, acetamino or acetamido or carboxamido; and n is 2 or 3 or an acid addition salt with a pharmaceutically acceptable organic or inorganic acid, a pharmaceutically acceptable quaternary ammonium salt, a pharmaceutically acceptable internal salt or a salt of a pharmaceutically acceptable metal or optionally substituted ammonium.

4,436,909

CATIONIC SURFACE-ACTIVE AGENTS

Gregoire Kalopissis, Paris, and Guy Vanlerberghe, Mitry-Mory, both of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 891,455, Mar. 29, 1978, Pat. No. 4,220,602, which is a division of Ser. No. 742,671, Nov. 17, 1976, Pat. No. 4,096,332, which is a division of Ser. No. 547,465, Feb. 6, 1975, Pat. No. 4,009,255, which is a division of Ser. No. 187,151, Oct. 6, 1971, Pat. No. 3,879,464, which is a continuation-in-part of Ser. No. 655,336, Jul. 24, 1967, abandoned. This application Jan. 11, 1980, Ser. No. 111,326

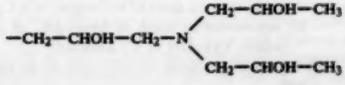
Claims priority, application Luxembourg, Jul. 26, 1966, 51645; May 12, 1967, 53667

Int. Cl.³ C07D *295/08*; C07C *91/10*

U.S. Cl. 546—248 **15 Claims**

1. A cationic surface-active agent having the formula

$$R'O\text{-}(C_2H_3(CH_3)O)_m\text{-}(C_2H_3(CH_2OH)O)_n$$



wherein R' is octadecyl, m has a statistical average value of 5.25 and n has a statistical average value of 1.

4,436,910

PROCESS FOR THE PRODUCTION OF AQUEOUS SOLUTIONS OF SODIUM SALTS OF α-AMINO CARBOXYLIC ACIDS

Axel Kleemann, Hanau; Bernd Lehmann, Freigericht, and Jürgen Martens, Alzenau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 10, 1982, Ser. No. 347,477

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1981, 3105008

Int. Cl.³ C07D *211/60, 207/16*

U.S. Cl. 546—245 **9 Claims**

1. A process for the production of an aqueous solution of the sodium salt of an α-aminocarboxylic acid practically free from foreign salts comprising saponifying under alkaline conditions the corresponding hydantoin at a temperature between 110° and 180° C. employing based on the hydantoin 1 equivalent of sodium hydroxide and 2 equivalents of calcium oxide or hydroxide per hydantoin group, after the end of the saponification separating off the precipitated calcium carbonate and concentrating the remaining aqueous sodium salt solution to drive off the ammonia contained therein with the proviso that there is additionally employed 1 equivalent of sodium hydroxide for any carboxyl or carbamido group present in the hydantoin, the materials employed consisting essentially of the hydantoin, sodium hydroxide, calcium oxide or hydroxide and water.

4,436,911

HETEROCYCLIC AMIDINOUREAS

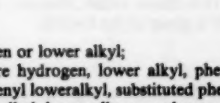
William L. Studt, Harleysville; Harry K. Zimmerman, Quakertown, and George H. Douglas, Malvern, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed May 12, 1981, Ser. No. 262,811

Int. Cl.³ C07D *213/77*; A61K *31/44*

U.S. Cl. 546—291 **12 Claims**

1. A compound of the formula



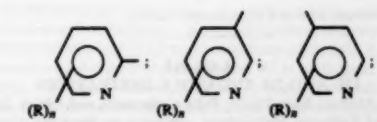
wherein:

X is O or S;

R_2 is hydrogen or lower alkyl;

R_5 and R_6 are hydrogen, lower alkyl, phenyl, substituted phenyl, phenyl loweralkyl, substituted phenyl loweralkyl, cycloloweralkyl, lower alkoxy, or lower alkenyl;

R_1 is one of the following pyridyl groups;



wherein n is 0 or 1; and (R) is a ring substituent selected from the group consisting of lower alkyl, lower alkoxy, lower alkenyl, lower alkynyl, phenyl, phenyl loweralkyl, loweralkyl phenyl loweralkyl, nitro, sulfonyl, carbamoyl, halo, cyano, carboxyl, amino, lower alkanoyl, amino lower alkyl, lower alkyl amido, hydroxy, halo lower alkyl, lower alkanoyloxy, and lower alkanoylamino;

and wherein substituted phenyl means a phenyl group in which one or more of the hydrogens has been replaced by the same or different substituents including halo, or lower alkyl;

or a non-toxic pharmaceutically acceptable salt thereof.

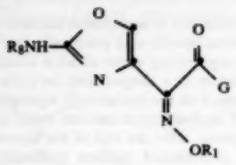
4,436,912

7-[2-(2-AMINOOXAZOL-4-yl)-2-(OXIMINO)ACETAMIDO CEPHALOSPORIN ANTIBIOTICS AND INTERMEDIATES THEREFOR

William J. Wheeler, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

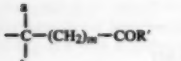
Division of Ser. No. 300,140, Sep. 8, 1981. This application Sep. 13, 1982, Ser. No. 417,242
Int. Cl.³ C07D *263/30*
U.S. Cl. 548—233 25 Claims

1. A compound of the formula

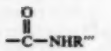


wherein:

R_1 is hydrogen, C_1 to C_4 alkyl, a carboxy-substituted alkyl or carboxy-substituted cycloalkyl group represented by the formula

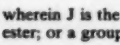


wherein m is 0 to 3; a and b when taken separately are independently hydrogen or C_1 to C_3 alkyl, or when taken together with the carbon to which they are attached form a C_3 to C_7 carboxylic ring; R′ is hydroxy, amino, C_1 to C_4 alkoxy, or —OR″ where R″ is a carboxy-protecting group; or R_1 is a secondary amido group of the formula



wherein R‴ is C_1 to C_4 alkyl, phenyl or C_1 to C_3 alkyl substituted by phenyl; R_8 is hydrogen or an amino protecting group; G is chloro, bromo, hydroxy, C_1 to C_4 alkoxy, phenoxy, or a group of the formula

wherein J is the residue of a group forming an activated ester; or a group of the formula



wherein $M^{\oplus}$ is a monovalent cation.

4,436,913

1H- AND 2H- INDAZOLE DERIVATIVES

Istvan Molnar; Kurt Thiele; Felix Geissmann, and Ulrich Jahn, all of Zofingen, Switzerland, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland

PCT No. PCT/EP80/00094, § 371 Date Apr. 28, 1982, § 102(e) Date Apr. 28, 1982, PCT Pub. No. WO82/00824, PCT Pub. Date Mar. 18, 1982
PCT Filed Sep. 5, 1980, Ser. No. 375,116
Int. Cl.³ C07D *403/12*
U.S. Cl. 548—316 17 Claims

1. 1H- and 2H-indazole derivative selected from the group consisting of 4-(2-imidazolin-2-ylamino)-2-benzyl-indazole, 6-(2-imidazolin-2-ylamino)-2-methyl-indazole dihydrochloride, 4-(2-imidazolin-2-ylamino)-1-benzyl-indazole, 5-(2-imidazolin-2-ylamino)-1-benzylindazole, 5-(2-imidazolin-2-ylamino)-1-(4-chlorobenzyl)-indazole, 5-(2-imidazolin-2-ylamino)-2-benzyl-indazole, 7-(2-imidazolin-2-ylamino)-1-benzyl-indazole, 7-(2-imidazolin-2-ylamino)-2-benzyl-indazole, 5-chloro-1-(2-imidazolin-2-ylamino)phenyl)-indazole, 5-chloro-1-(3,5-dichloro-4-(2-imidazolin-2-ylamino)phenyl)-indazole hydrochloride, 5-chloro-1-(3,5-dichloro-2-(2-imidazolin-2-ylamino)phenyl)-indazole, 5-chloro-1-(3-(2-imidazolin-2-ylamino)benzyl)-indazole or a pharmaceutically acceptable salt thereof.

4,436,914

BENZODIOXANE-IMIDAZOLINE COMPOUNDS AS ANTIHYPERTENSIVES

Arthur F. Kluge; Arthur M. Strosberg; Roger L. Whiting, and George A. Christie, all of 3401 Hillview Ave., Palo Alto, Calif. 94304

Filed Aug. 3, 1981, Ser. No. 289,679
Int. Cl.³ C07D *405/04, 405/06*
U.S. Cl. 548—348 3 Claims

1. The compound 4-phenyl-2-(1,4-benzodioxan-2-ylmethyl-)imidazoline or a pharmaceutically acceptable acid addition salt thereof.

4,436,915

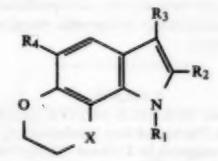
PYRANO-INDOLES

Francois Picart, Dijon, France, assignor to Societe de Recherches Industrielles, Paris, France

Filed Jun. 23, 1981, Ser. No. 276,643
Claims priority, application France, Jun. 26, 1980, 80 14246
Int. Cl.³ C07D *491/06*
U.S. Cl. 548—432 9 Claims

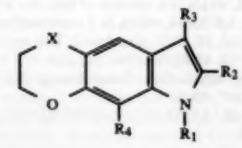
9. Pyranoindole compounds selected from the group consisting of;

(i) pyrano indoles of the formula:



I_o

(ii) pyrano indoles of the formula: and



I'_o

(iii) pharmaceutically acceptable acid addition salts thereof in which:

x represents CH_2, CHOH, or CO;

R_1 represents an atom of hydrogen, or a C_{1-4} alkyl group;

R_2 represents an atom of hydrogen, or a COY_2 group (where Y_2 is OH or C_{1-4} alkoxy);

R_3 represents an atom of hydrogen, or an atom of halogen; and

R_4 represents an atom of hydrogen, an atom of halogen, an OH group C_{1-4} alkyl, or C_{1-4} alkoxy.

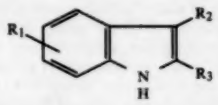
4,436,916

PROCESS FOR THE PREPARATION OF INDOLES

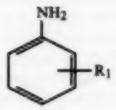
Fujio Matsuda, Kamakura; Takazo Kato, Ashigarakami; Tadatoshi Honda, Fujisawa; Kazuhiro Terada, Yokohama, and Yasuo Kogure, Yokosuka, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed May 18, 1981, Ser. No. 264,627
Claims priority, application Japan, Jun. 3, 1980, 55-73741
Int. Cl.³ C07D *209/08, 209/12*
U.S. Cl. 548—508 10 Claims

1. A process for the preparation of indoles of formula I



wherein R_1 is a hydrogen atom, chlorine atom, bromine atom, methyl group, or methoxy group, and each of R_2 and R_3 is a hydrogen atom, methyl group or ethyl group, at least one of R_2 and R_3 is a hydrogen, which comprises the step of reacting a member selected from the group consisting of anilines of formula (II)



wherein R_1 has the same meaning as in the formula I, with a 1,2-glycol selected from the group consisting of ethylene glycol, propylene glycol and 1,2-butanediol in the presence of a catalytic amount of a sulfide or selenide of cadmium and/or zinc in the vapor phase at a temperature of from 200° C. to 600° C., or in the liquid phase or mixed vapor-liquid phase at a temperature of from 200° C. to 500° C.

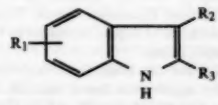
4,436,917

PROCESS FOR THE PREPARATION OF INDOLES

Fujio Matsuda, Kamakura, and Takazo Kato, Ashigarakami, both of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Apr. 15, 1981, Ser. No. 254,310
Int. Cl.³ C07D *209/08, 209/12*
U.S. Cl. 548—508 18 Claims

1. A process for the preparation of indoles of the formula



wherein R_1 is a hydrogen atom, chlorine atom, bromine atom, methyl group, or methoxy group and R_2 and R_3 are a hydrogen atom, methyl group or ethyl group, at least one of R_2 and R_3 being hydrogen which comprises the step of reacting a compound selected from the group consisting of aniline, o-toluidine, m-toluidine, p-toluidine, o-chloroaniline, m-chloroaniline, p-chloroaniline, o-bromoaniline, m-bromoaniline, p-bromoaniline, o-anisidine, m-anisidine or p-anisidine with a member selected from the group consisting of ethylene glycol, propylene glycol, and 1,2-butanediol, in the vapor phase at a temperature of 200° to 600° C., or in the liquid phase or a mixed vapor-liquid phase a temperature of 200° to 500° C. in the presence of a catalytic amount of:

(a) at least one member selected from the group consisting of CdO, Al_2O_3—B_2O_3, SiO_2—CdO, SiO_2—MgO, TiO_2—SnO$_2$, CdO—Bi_2O_3, SiO_2—Y_2O_3, Bi_2O_3—BeO, SiO_2—La_2O_3, SiO_2—Ce_2O_3 and SiO_2—ZnO—AgO;

(b) a sulfide or selenide of at least one element selected from the group consisting of Pd, Pt, and Mo;

(c) a chloride, nitrate, sulfate or phosphate of at least one element selected from the group consisting of Tl, Mn, Y, Al, Zn, Cd and In;

(d) at least one element selected from the group consisting of Ir, Os and Ru; or

(e) Metallic Ag supported on an α-Al_2O_3 or SiO_2—ZnO carrier.

17. A process for the preparation of an indole which comprises the step of reacting aniline, p-toluidine, p-chloroaniline or o-anisidine with ethylene glycol, propylene glycol or 1,2-butanediol in the vapor phase at a temperature of 200° to 600° C. in the presence of a catalytic amount of:

(a) at least one member selected from the group consisting of CdO, Al_2O_3—B_2O_3, SiO_2—CdO, SiO_2—MgO, TiO_2—SnO$_2$, CdO—Bi_2O_3, SiO—Y_2O_3, Bi_2O—BeO, SiO_2—La_2O_3, SiO—$_2$—Ce_2O_3 and SiO2—ZnO—AgO;

(b) a sulfide or selenide of at least one element selected from the group consisting of Pd, Pt and Mo;

(c) a chloride, nitrate, sulfate or phosphate of at least one element selected from the group consisting of Tl, Mn, Y, Al, Zn, Cd and In;

(d) at least one element selected from the group consisting of Ir, Os and Ru; or

(e) metallic Ag supported on an α-Al_2O_3 or SiO_2—ZnO carrier, thereby forming an indole.

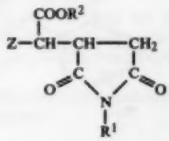
4,436,918

METHOD FOR PRODUCTION OF PEPTIDE, AND ITS INTERMEDIATE

Satoshi Horii, Sakai; Hiroshi Fukase, Osaka, and Eiji Higashide, Takarazuka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jan. 18, 1982, Ser. No. 340,337
Claims priority, application Japan, Jan. 26, 1981, 56-10544
Int. Cl.³ C07D *207/40*
U.S. Cl. 548—546 1 Claim

1. A compound of the formula:



wherein Z is amino or amino protected by benzyloxycarbonyl, p-methoxybenzyloxycarbonyl, p-nitrobenzyloxycarbonyl, p-chlorobenzyloxycarbony, p-bromobenzyloxycarbonyl, tert-butoxycarbonyl or 2,2,2-trichloroethoxy-carbonyl; R^1 is hydrogen or 2,4-dimethoxybenzyl; and R^2 is hydrogen, methyl, ethyl, tert-butyl, 2,2,2-trichloroethyl, benzyl, p-methoxybenzyl, p-nitrobenzyl, trityl, benzhydryl, bis(p-methoxyphenyl)-methyl or phenacyl.

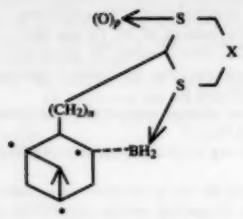
4,436,919

BORANE COMPLEXES

Christian Aspisi, Boulbon; Marc Bonato, Aramon, and Robert Jacquier, Montpellier, all of France, assignors to Societe d'Expansion Scientifique "EXPANSIA", Paris, France

Filed Mar. 17, 1982, Ser. No. 358,847
Claims priority, application United Kingdom, Mar. 25, 1981, 8109392
Int. Cl.³ C07F *5/02*
U.S. Cl. 549—4 1 Claim

1. Chiral organoboranes of the formula



in which X represents a methylene group or a sulphur atom, n and p are 0 or 1.

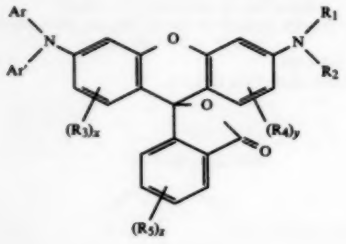
4,436,920

IMAGE RECORDING MEMBERS

Kozo Sato; Ken Iwakura, both of Kanagawa, and Akira Igarashi, Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Division of Ser. No. 212,010, Dec. 1, 1980, Pat. No. 4,390,616. This application Mar. 11, 1982, Ser. No. 357,105
Claims priority, application Japan, Nov. 30, 1979, 54-155117
Int. Cl.³ C07D *493/10*
U.S. Cl. 549—227 **6 Claims**

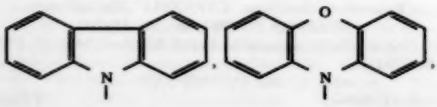
1. A diarylaminofluoran dye precursor represented by the formula (I)



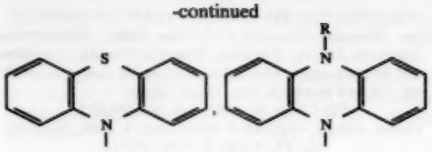
(I)

wherein

Ar and Ar' each are selected from the group consisting of a phenyl group, an alkyl-substituted phenyl group, an alkoxy-substituted phenyl group, a halogen-substituted phenyl group, a naphthyl group, an aralkyl-substituted naphthyl group, a halogen-substituted naphthyl group, and an alkoxy-substituted naphthyl group, or wherein Ar and Ar' are heterocyclic rings selected from the group consisting of a furyl group, a pyrrolyl group, a thienyl group, an indolyl group, a carbazolyl group, a phenoxazinyl group, a phenothiazinyl group, and a phenazinyl group, or wherein Ar and Ar' together form a heterocyclic ring selected from the group consisting of

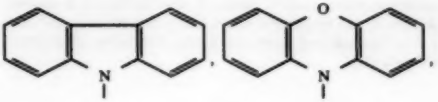


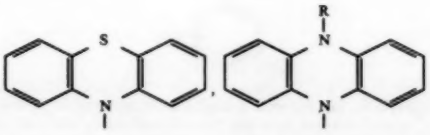
-continued



wherein R is an alkyl group,

R_1 and R_2 each represent hydrogen, an alkyl group, a cycloalkyl group, an aralkyl group, an aryl group or a heterocyclic ring selected from the group consisting of a furyl group, a pyrrolyl group, a thienyl group, an indolyl group, a carbazolyl group, a phenoxazinyl group, a phenothiazinyl group, and a phenazinyl group, or R_1 and R_2 together form a heterocyclic ring selected from the group consisting of





wherein R is an alkyl group,

R_3, R_4 and R_5 each represent an alkyl group, an alkoxy group, a halogen atom, a nitro group, an amino group, an alkylamino group, a dialkylamino group, or an acylamino group,

x and y are each 0 or an integer of from 1 to 3, and

z is 0 or an integer of from 1 to 4.

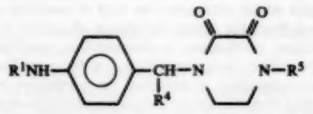
4,436,921

1-(4-AMINOBENZYL)-2,3-DIOXOPIPERAZINE DERIVATIVES, ACID ADDITION SALTS THEREOF AND PROCESS FOR PRODUCING SAME

Takako Hori, Toyama; Chosaku Yoshida, Takaoka; Yasuo Kiba, Toyama; Ryuko Takeno, Toyama; Joji Nakano, Toyama; Jun Nitta, Namekawa; Sumiko Kishimoto, Toyama; Shohachi Murakami, Toyama; Hisatsugu Tsuda, Toyama, and Isamu Saikawa, Toyama, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 16, 1980, Ser. No. 169,457
Claims priority, application Japan, Jul. 24, 1979, 54-93234
Int. Cl.³ C07D *401/00*; A61K *31/495*
U.S. Cl. 544—238 **4 Claims**

1. A compound represented by the following formula,



wherein

R^1 represents a 6-membered nitrogen heterocyclic group selected from the group consisting of piperidinyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, 2-pyrimidinyl, 4-pyrimidinyl, 5-pyrimidinyl, 3-pyridazinyl, 4-pyridazinyl and pyrazinyl,

and is optionally substituted by fluorine, chlorine, bromine, iodine, hydroxyl, carboxyl, C_{1-4} alkoxycarbonyl, phenyl-C_{1-4} alkoxycarbonyl, phenoxycarbonyl, C_{1-4} alkyl, di-C_{1-4} alkoxy-C_{1-4} alkyl, C_{2-4} alkenyl, phenyl-C_{1-4} alkyl, C_{5-6} cycloalkyl, cyano, mercapto, C_{1-4} alkylthio, nitro, oxo, imino, thioxo, C_{1-4} alkanoylamino, C_{1-4} alkoxy, phenyl-C_{1-4} alkyloxy, C_{1-3} acyl, amino, C_{1-4} alkylamino, di-C_{1-4} alkylamino, anilino, phenyl-C_{1-4} alkylamino, phenyl-C_{1-4} alkoxycarbamoyl, pyridylamino, pyrimidinylamino or 5- or 6-membered heterocyclic group containing O, S or N selected from the group consisting of piperidinyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, 2-pyrimidinyl, 4-pyrimidinyl, 5-pyrimidinyl, 3-pyridazinyl, 4-pyridazinyl, pyrazinyl, 2-pyrrolidinyl, 3-pyrrolidinyl, 3-pyrazolyl, 4-pyrazolyl, 5-pyrazolyl, 4-triazolyl, 5-triazolyl, 5-tetrazolyl, 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, 2-thiazolyl, 4-thiazolyl, 5-thiazolyl, 3-isothiazolyl, 4-isothiazolyl, 5-isothiazolyl, 2-oxazolyl, 4-oxazolyl, 5-oxazolyl, 3-isoxazolyl, 4-isoxazolyl, 5-isoxazolyl, 2-imidazolyl, 4-imidazolyl, 5-imidazolyl, 2-indolyl, 3-indolyl, 5-indolyl, 2-benzimidazolyl and 5-benzimidazolyl;

R^4 represents hydrogen or C_{1-4} alkyl; and

R^5 represents hydrogen, C_{1-6} alkyl, phenyl-C_{1-4} alkyl, 2-pyrazinyl or phenyl, which may be unsubstituted or substituted by fluorine, chlorine, bromine, iodine, C_{1-4} alkyl, C_{1-4} alkoxycarbonyl, C_{5-6} cycloalkyl, C_{1-4} alkanoylamino, C_{1-4} alkoxy, C_{1-3} acyl, amino, nitro, di-C_{1-4} alkylamino, pyridylamino, piperidinyl,2-pyridyl, pyrazinyl or 2-furyl which may be substituted by methyl, methoxycarbonyl, acetylamino, amino, or nitro; or

a pharmaceutically acceptable acid addition salt thereof.

4,436,922

METHOD FOR MANUFACTURE OF HIGH-PURITY PHTHALIC ANHYDRIDE

Yuichi Kita, Akashi; Kentaro Sakamoto, Hyogo, and Takahisa Sato, Himeji, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Jul. 1, 1982, Ser. No. 394,477

Claims priority, application Japan, Jul. 6, 1981, 56-104404; Jul. 15, 1981, 56-109300; Nov. 7, 1981, 56-177808

Int. Cl.³ C07D *307/89*

U.S. Cl. 549—251 **12 Claims**

1. A method for the manufacture of high-purity phthalic anhydride, which comprises exposing crude phthalic anhydride obtained by vapor-phase catalytic oxidation of ortho-xylene to contact with, per Kg of crude phthalic anhydride, a gas containing molecular oxygen at a rate of at least 0.0001 mole/hour of oxygen, at an elevated temperature in the presence of 10–10,000 ppm by weight, as alkali metal atom, of an alkali metal salt of at least one carboxylic acid selected from the group consisting of maleic acid, succinic acid and benzoic acid, and subsequently subjecting the resultant reaction mixture to distillation.

6. A method for the manufacture of high-purity phthalic anhydride, which comprises exposing crude phthalic anhydride obtained by vapor-phase catalytic oxidation of ortho-xylene, par Kg thereof, to contact with a gas containing at least 0.0001 mole/hour of molecular oxygen at an elevated temperature in the presence of 10–10,000 ppm by weight, as alkali metal atom of an alkali metal salt of at least one carboxylic acid selected from the group consisting of maleic acid, succinic acid and benzoic acid together with a manganese-containing alloy composition, of at least 0.05% by weight and a surface area of at least $5 \times 10^3 m^2$ and subsequently subjecting the resultant reaction mixture to distillation.

4,436,923

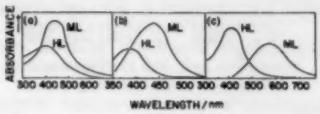
TRIFLUOROMETHYL-SUBSTITUTED CHROMOGENIC CROWN ETHERS AND METHODS OF USING SAME

Gilbert E. Pacey, and Benard P. Bubnis, both of Oxford, Ohio, assignors to The President and Trustees of the Miami University, Oxford, Ohio

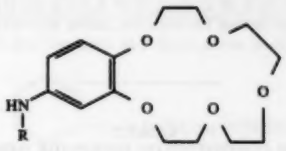
Filed Jun. 7, 1982, Ser. No. 386,066

Int. Cl.³ C07D *323/00*

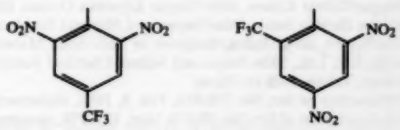
U.S. Cl. 549—352 **4 Claims**



1. Chromogenic crown ethers of the formula



where R is taken from the group consisting of



4. A process for synthesis of trifluoromethyl-substituted, 15-crown-5 chromogenic ethers, comprising the following steps in sequence:

(a) forming a reaction mixture in an organic solvent of

(i) 4'-aminobenzo-15-crown-5,

(ii) a compound selected from the group consisting of 1-chloro-2,6-dinitro-4-trifluoromethylbenzene, and 1-chloro-2,4-dinitro-6-trifluoromethylbenzene, and

(iii) a base, and

(b) isolating a trifluoromethyl-substituted crown ether from said reaction mixture.

4,436,924

ULTRAVIOLET LIGHT ABSORBING AGENTS AND COMPOSITIONS AND ARTICLES CONTAINING SAME

Bruce A. Ashby, and Siegfried H. Schroeter, both of Schenectady, N.Y., assignors to General Electric Company, Waterford, N.Y.

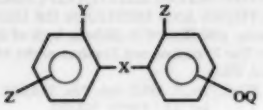
Division of Ser. No. 225,429, Jan. 15, 1981, Pat. No. 4,374,674. This application Sep. 23, 1982, Ser. No. 421,797

The portion of the term of this patent subsequent to Jul. 14, 1998, has been disclaimed.

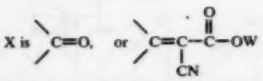
Int. Cl.³ C09K *3/00*; C07F *7/18, 7/09*

U.S. Cl. 556—416 **3 Claims**

1. An ultraviolet light absorbing agent, comprising a compound having the formula:



wherein



Y is OH;
Z is H, OH, OQ or OW;
Q is $-CH_2(CH_2)_nSi(R_2)_x(OR_1)_y$; and
W is $-C_mH_{2m+1}$;
where x=0, 1 or 2, y=1, 2 or 3, x+y=3, R_1=alkyl or alkanoyl having 1 to 6 carbon atoms, R_2=alkyl having 1 to 6 carbon atoms, n=0, 1 or 2 and m=1 to 18.

4,436,925

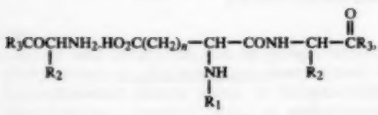
ADDITION COMPOUND OF DIPEPTIDE DERIVATIVE AND AMINO ACID DERIVATIVE

Yoshikazu Isowa; Muncki Ohmori, both of Tokyo; Kaoru Mori; Tetsuya Ichikawa, both of Sagamihara; Yuji Nonaka, Shin-Nanyo; Keiichi Kihara, Shin-Nanyo; Kiyotaka Oyama, Shin-Nanyo; Heijiro Satoh, Shin-Nanyo, and Shigeaki Nishimura, Shin-Nanyo, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin-Nanyo and Sajami Chemical Research Center, Tokyo, both of, Japan

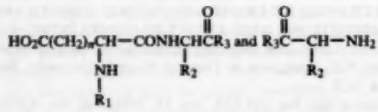
Continuation of Ser. No. 119,654, Feb. 8, 1980, abandoned, which is a division of Ser. No. 20,058, Mar. 13, 1979, abandoned, which is a division of Ser. No. 870,108, Jan. 17, 1978, abandoned.
This application Jun. 3, 1980, Ser. No. 270,025
Claims priority, application Japan, Jan. 27, 1977, 52-7279; May 19, 1977, 52-57036
The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.
Int. Cl.³ C07C *101/00*
U.S. Cl. 560—19 **9 Claims**

1. A process for resolving a racemate of a phenylalanine lower alkyl ester, comprising:

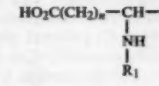
(a) preparing an addition compound of the formula:



wherein the



fragments of said addition compound are the LL form and D form respectively, and wherein R_1 is a benzyloxycarbonyl group or a p-methoxybenzyloxycarbonyl group, R_2 is benzyl, R_3 is lower alkoxy and n is 1 or 2 by reacting an N-substituted-L-monoamino-dicarboxylic acid of the formula:



wherein R_1 and n are as defined above with a DL-phenylalanine lower alkyl ester of the formula:

wherein R_2 and R_3 are as defined above in the presence of protease in an aqueous medium at a pH at which said protease exerts its enzymatic activity;

(b) separating said addition compound from the aqueous medium;

(c) reacting said acid addition compound with an aqueous acid solution, thereby decomposing said acid addition compounds; and

(d) recovering said phenylalanine lower alkyl ester in its D-form.

4,436,926

ALKANE ACETATES PRODUCED BY OXIDATIVE ESTERIFICATION OF OLEFINS OVER A CATALYST CONTAINING A RARE EARTH OXIDE

John R. Sanderson; Terry L. Renken, and Lewis W. Watts, Jr., all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,662
Int. Cl.³ C07C *67/05*
U.S. Cl. 560—246 **10 Claims**

1. An improved process for the production of alkane hydroxy acetates and diacetates by reacting an olefin or a mixture of olefins with oxygen and a carboxylate ion source selected from the group consisting of acetic acid and acetic anhydride, wherein the improvement consists essentially of conducting the reaction in the presence of a rare earth oxide catalyst.

4,436,927

ALKANE ACETATES PRODUCED BY OXIDATIVE ESTERIFICATION OF OLEFINS OVER THALLIUM BORATE

John R. Sanderson, and Lewis W. Watts, Jr., both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,665
Int. Cl.³ C07C *67/05*
U.S. Cl. 560—246 **6 Claims**

1. An improved process for the production of alkane hydroxy acetates and diacetates by reacting an olefin or a mixture of olefins with oxygen and a carboxylate ion source selected from the group consisting of acetic acid and acetic anhydride, wherein the improvement comprises conducting the reaction in the presence of thallium borate.

4,436,928

ALKANE ACETATES PRODUCED BY OXIDATIVE ESTERIFICATION OF OLEFINS OVER CATALYST SYSTEMS CONTAINING OXIDES AND BORATES

John R. Sanderson; Terry L. Renken, and Lewis W. Watts, Jr., all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,666
Int. Cl.³ C07C *67/05, 67/055*
U.S. Cl. 560—246 **14 Claims**

1. An improved process for the production of alkane hydroxy acetates and diacetates by reacting an olefin or a mixture of olefins with oxygen and a carboxylate ion source selected

from the group consisting of acetic acid and acetic anhydride wherein the improvement comprises conducting the reaction in the presence of a catalyst system comprising at least one transition metal oxide compound and at least one borate compound selected from the group consisting of alkali metal borates, alkali earth metal borates and transition metal borates.

4,436,929

ALKANE ACETATES PRODUCED BY OXIDATIVE ESTERIFICATION OF OLEFINS OVER ALKALI EARTH METAL BORATES

John R. Sanderson, and Lewis W. Watts, Jr., both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,667
Int. Cl.³ C07C *67/05*
U.S. Cl. 560—246 **11 Claims**

1. An improved process for the production of alkane hydroxy acetates and diacetates by reacting an olefin or a mixture of olefins with oxygen and a carboxylate ion source selected from the group consisting of acetic acid and acetic anhydride, wherein the improvement comprises conducting the reaction in the presence of one or more alkali earth metal borate catalysts.

4,436,930

ALKANE ACETATES PRODUCED BY OXIDATIVE ESTERIFICATION OF OLEFINS OVER ALKALI METAL BORATES

John R. Sanderson, and Lewis W. Watts, Jr., both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,668
Int. Cl.³ C07C *67/05*
U.S. Cl. 560—246 **11 Claims**

1. An improved process for the production of alkane hydroxy acetates and diacetates by reacting an olefin or a mixture of olefins with oxygen and a carboxylate ion source selected from the group consisting of acetic acid and acetic anhydride, wherein the improvement consists essentially of conducting the reaction in the presence of one or more alkali metal borate catalysts.

4,436,931

ALKANE ACETATES PRODUCED BY OXIDATIVE ESTERIFICATION OF OLEFINS OVER CERTAIN OXIDE CATALYSTS

John R. Sanderson; Lewis W. Watts, Jr., and Terry L. Renken, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,685
Int. Cl.³ C07C *67/05*
U.S. Cl. 560—246 **10 Claims**

1. An improved process for the production of alkane hydroxy acetates and diacetates by reacting an olefin or a mixture of olefins with oxygen and a carboxylate ion source selected from the group consisting of acetic acid and acetic anhydride wherein the improvement consists essentially of conducting the reaction in the presence of an oxide catalyst selected from the group of oxide catalysts consisting of niobium oxide, iron oxide and bismuth oxide.

4,436,932

ALKANE ACETATES PRODUCED BY OXIDATIVE ESTERIFICATION OF OLEFINS OVER AMMONIUM BORATE IN THE PRESENCE OF A CARBOXYLATE ION SOURCE

John R. Sanderson, Austin; Steven H. Vanderpool, New Braunfels, and Lewis W. Watts, Jr., Austin, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,686
Int. Cl.³ C07C *67/05*
U.S. Cl. 560—246 **10 Claims**

1. An improved process for the production of alkane hydroxy acetates and diacetates by reacting an olefin or a mixture of olefins with oxygen and a carboxylate ion source selected from the group consisting of acetic acid and acetic anhydride, wherein the improvement comprises conducting the reaction in the presence of ammonium borate.

4,436,933

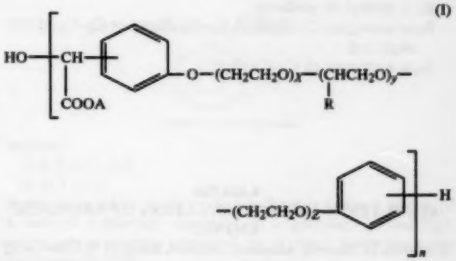
POLYMERIC ETHYLENE OXIDE/PROPYLENE OXIDE OR ETHYLENE OXIDE/BUTYLENE OXIDE ETHER CARBOXYLIC ACIDS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Helmut Diery, Kelkheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 31, 1982, Ser. No. 413,411
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1981, 3136025
Int. Cl.³ C07C *59/00*
U.S. Cl. 562—470 **3 Claims**

1. A polymeric ethylene oxide/propylene oxide or ethylene oxide/butylene oxide ether carboxylic acid of the formula

(I)



wherein R denotes methyl or ethyl, preferably methyl, A denotes hydrogen or a metal cation, preferably $Na^{(+)}$ or $K^{(+)}$, X and Z together denote a number from 2 to 360, preferably from 2 to 140, y denoted a number from 15 to 70, preferably from 25 to 70 and n denotes a number from 1 to 10.

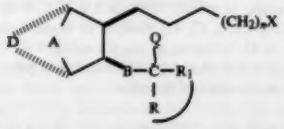
4,436,934

BICYCLIC PROSTAGLANDIN ANALOGS AND METHOD OF SYNTHESIS

Richard C. Larock, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Division of Ser. No. 231,596, Feb. 5, 1981. This application Dec. 28, 1981, Ser. No. 334,750
Int. Cl.³ C07C *177/00*
U.S. Cl. 562—502 **9 Claims**

1. Prostaglandin analogs of the formula:



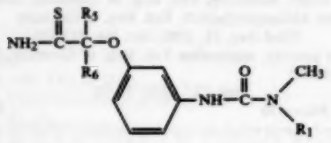
wherein n equals a whole integer of from 0 to 7, X is a carboxylic acid group, or X is an alcohol group, or C_1–C_8 ester, or C_1–C_8 ether, or C_1–C_8 amide, A is selected from the group of methylene, ethylene, oxy, imino, alkyl, phenyl and C_1–C_8 aryl substituted imino; D is selected from the group of methylene, ethylene, vinylene, B is selected from the group of ethylene, cis and trans vinylene, and ethynylene; R and R_1 are hydrogen, C_1–C_8 alkyl and C_1–C_8 aryl or $(CH_2)_z$ with Z being 2 to 5, and Q is hydroxy, methoxy, acetoxy or hydrogen, or Q and R_1 are oxa.

4,436,935
THIOCARBAMOYLALKOXYPHENYLUREAS

Dagmar Berrer, Riehen, Switzerland; Georg Pissiotas, Lörrach, Fed. Rep. of Germany, and Otto Rohr, Therwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 7, 1981, Ser. No. 291,008
Claims priority, application Switzerland, Aug. 19, 1980, 6254/80
Int. Cl.³ C07C 161/00; E05B 65/00
U.S. Cl. 564—49 5 Claims

1. A thiocarbamoyalkoxyphenylurea of the formula



wherein

R_1 is methyl or methoxy,

R_5 is hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy or C_2–C_5 alkoxyalkyl, and

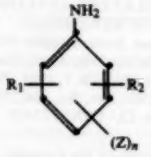
R_6 is hydrogen or C_1–C_4 alkyl.

4,436,936
ALKYLATION AND ARALKYLATION OF AROMATIC AMINES

Frederick H. Howell, Atherton, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 10, 1982, Ser. No. 387,082
Claims priority, application United Kingdom, Jun. 19, 1981, 8119010
Int. Cl.³ C07C 85/24
U.S. Cl. 564—409 13 Claims

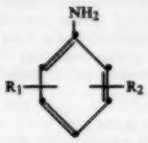
1. A process for producing a compound having the formula I



(I)

as well as salts or metal salt complexes thereof with organic or inorganic acids, in which formula I n is 1, 2 or 3, R_1 is H, halogen, CF_3, CCl_3, C_1–C_5 straight or branch chain alkyl or phenyl, R_2 is H, halogen, or C_1–C_5 straight or branch chain alkyl, and Z is linked at a position ortho or para to the NH_2 group and is a residue of formula

wherein R_3 is H or C_1–C_4 straight chain alkyl, R_4 is C_1–C_4 straight chain alkyl or phenyl and R_5 is C_1–C_8 straight or branch chain alkyl or phenyl, or R_3 and R_4 and/or R_4 and R_5, together with the carbon atom to which they are bonded, may be a cyclohexylene ring, which comprises reacting 1.0 mole of an aromatic amine having the formula II



(II)

wherein R_1 and R_2 have their previous significance, with up to three moles of an alkylating agent (III) capable of introducing a residue Z into the benzene ring of an amine of formula II at a position ortho or para to the NH_2 group, the reaction being effected at elevated temperature in the presence of an acid catalyst in an aqueous acid medium containing at least 30% by weight of water, based on the acid used, and optionally converting the compound of formula I into a salt, or metal salt complex, with an organic or inorganic salt.

4,436,937
PROCESS FOR THE RING ALKYLATION OF AN ANILINE

Frank Baardman; Robert van Helden, and Margaretha J. de Nie-Sarink, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 25, 1982, Ser. No. 436,215
Claims priority, application United Kingdom, Nov. 11, 1981, 8133996
Int. Cl.³ C07C 85/24
U.S. Cl. 564—409 8 Claims

1. A process for the alkylation of an aniline which comprises treating the aniline with an alkylating agent in the liquid phase, at a temperature in the range of from −30° C. to 40° C., in the presence of at least 1.02 mole of an aluminum halide per mole of the aniline.

4,436,938
MANUFACTURE OF AMINES

Alan J. Tompsett, Stockton-on-Tees, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Aug. 31, 1982, Ser. No. 413,443
Claims priority, application United Kingdom, Sep. 18, 1981, 8128322
Int. Cl.³ C07C 85/06, 85/02
U.S. Cl. 564—474 9 Claims

1. A process for the manufacture of methylamines which comprises reacting a feed comprising methanol, dimethylether or mixtures thereof and ammonia over a catalyst comprising binderless zeolite A in the alkaline earth form.

4,436,939
PROCESS FOR PRODUCING 1-(P-PRENYLPHENYL)ETHANOL

Takehiro Amano, Uraws; Kensei Yoshikawa, Kitamoto; Tatsuhiko Sano; Yutaka Ohuchi, both of Ohmiya; Michihiro Ishiguro, Kurashiki; Manzo Shiono, Kurashiki; Yoshiji Fujita, Kurashiki, and Takashi Nishida, Kurashiki, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo and Kuraray Co., Ltd., Okayama, both of, Japan

Filed Aug. 25, 1982, Ser. No. 411,481
Claims priority, application Japan, Aug. 26, 1981, 56-134778
Int. Cl.³ C07C 33/28
U.S. Cl. 568—813 9 Claims

1. A process for producing 1-(p-prenylphenyl)ethanol, which comprises reacting p-chloroprenylbenzene with magnesium at a temperature between 100° C. and 150° C. to form a Grignard reagent, and then reacting said Grignard reagent with acetaldehyde at a temperature between −40° C. and 20° C.

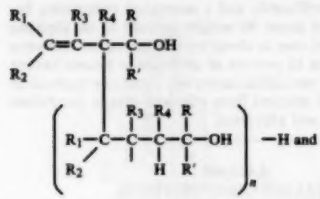
4,436,940

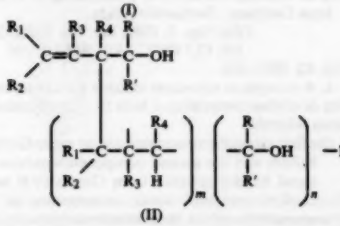
PHOTOCHEMICAL METHOD FOR PREPARING LOW MOLECULAR WEIGHT OLEFIN POLYMERS AND COPOLYMERS OF 3-BUTENE-1-OL

Ellis K. Fields, River Forest, and William C. Clarke, Evanston, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 21, 1981, Ser. No. 256,060
Int. Cl.³ B01J 19/12
U.S. Cl. 568—857 18 Claims

1. A composition structurally represented as containing repeating units as follows:





(I)

(II)

wherein m and n are fractional and whole numbers from 1 to 10, R_1, R_2, R_3 and R_4 are individually selected from the group consisting of hydrogen and alkyl groups of 1 to 9 carbon atoms, wherein the sum of carbon atoms of R_1, R_2, R_3 and R_4 does not exceed 9, R and R′ are alkyl groups of from 1 to 11 carbon atoms wherein the sum of carbon atoms of R′ and R does not exceed 12 wherein R_1 and R_3 can be joined to form an alicyclic olefin.

4,436,941

PROCESS FOR THE ISOMERIZATION OF ALKYLBENZOTRIFLUORIDES

Albrecht Marhold, Leverkusen, and Erich Klauke, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 13, 1982, Ser. No. 449,331
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151364
Int. Cl.³ C07C 17/24
U.S. Cl. 570—144 20 Claims

1. A process for isomerizing an alkylbenzotrifluoride which comprises contacting said alkylbenzotrifluoride with hydrogen fluoride.

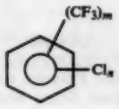
4,436,942

PROCESS FOR THE CATALYZED FLUORINATION OF HALOALKYL AROMATIC COMPOUNDS

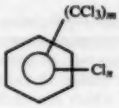
Charles G. Rader, Grand Island, and Stephen Robota, North Tonawanda, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Continuation of Ser. No. 846,047, Oct. 27, 1977, abandoned.
This application Apr. 30, 1979, Ser. No. 34,803
Int. Cl.³ C07C 9/08
U.S. Cl. 570—145 19 Claims

1. A process for the preparation of a benzotrifluoride compound of the formula



which comprises contacting a benzotrichloride compound of the formula



wherein
n is 0 to 5, and
m is 1 to 3
in the vapor phase, with hydrogen fluoride in the presence of a catalyst consisting essentially of a granular, porous high surface area catalyst prepared by treating γ-alumina with hydrogen fluoride.

4,436,943

PROCESS FOR THE PREPARATION OF 2,2-DICYCLOHEXENYLPROPANE

Gebhard Rauleder, Haan, and Helmut Waldmann, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 21, 1983, Ser. No. 477,464
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1982, 3211304
Int. Cl.³ C07C 1/20
U.S. Cl. 585—357 9 Claims

1. A process for the preparation of 2,2-dicyclohexenylpropane which comprises heating 4,4′-dioxydicyclohexylpropane in the presence of a strong acid, under a pressure of 1 to 50 m.bar and at a temperature in the range of from 120° to 220° C. and distilling off 2,2-dicyclohexenylpropane together with water formed from the reaction mixture and separating water from the top product of the distillation.

4,436,944

PREPARATION OF O-XYLENE AND ETHYLBENZENE

Hans-Martin Weitz, Bad Durkheim; Rolf Fischer, Heidelberg, and Hans H. Pohl, Deidesheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 5, 1982, Ser. No. 337,285
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1981, 3101043
Int. Cl.³ C07C 1/20
U.S. Cl. 585—408 5 Claims

1. A process for the preparation of a mixture of o-xylene and ethylbenzene in a one-stage reaction, said mixture containing ethylbenzene as its principal product, which process comprises:

heating 2,7-octadien-1-ol, 1,7-octadien-3-ol or mixtures con-

taining these octadienols, or carboxylates of 2,7-octadien-1-ol or of 1,7-octadien-3-ol, or mixtures containing these carboxylates at a temperature of from 200° to 550° C. over an aluminum oxide or titanium doxide catalyst to convert these starting materials to said mixture of o-xylene and ethylbenzene, ethylbenzene being the principal product of the mixture.

4,436,945

METHOD OF HYDRO-DEALKYLATION

Masahiko Koya, and Yohei Fukuoka, both of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 22, 1982, Ser. No. 360,145
Claims priority, application Japan, Apr. 1, 1981, 56-49193
Int. Cl.³ C07C *4/12*
U.S. Cl. 585—488 4 Claims

1. A method for hydro-dealkylation of an alkyl aromatic hydrocarbon which comprises treating the alkyl aromatic hydrocarbon in the presence of hydrogen using a catalyst mainly composed of a zeolite 15 to 50 equivalent % of exchangeable cations of which are exchanged with hydrogen ions.

4,436,946

PREPARATION OF PROPYLENE AND BUTYLENE DIMERS USING PALLADIUM CYANIDE AS CATALYST

Edgar J. Smutny, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 19, 1982, Ser. No. 442,999
Int. Cl.³ C07C *3/10, 3/12, 3/18*
U.S. Cl. 585—510 11 Claims

1. A process for the selective dimerization of propylene and/or n-butylenes which comprises steps for (a) contacting under mechanical agitation an olefin reactant selected from the group consisting of propylene, 1-butene, 2-butene, and mixtures thereof with a heterogeneous palladium cyanide catalyst at a temperature in the range from about 50° C. to 150° C., the quantity of said palladium cyanide being between about 0.01 and 10 percent by weight calculated on the weight of olefin reactant, to produce a reaction product solution containing olefin reactant dimers, and (b) recovering said dimers from said product solution.

4,436,947

OLEFIN OLIGOMERIZATION USING BORON TRIFLUORIDE AND A THREE-COMPONENT COCATALYST

Neal E. Morganson, McCandless Township, Allegheny County, and Adam V. Vayda, Oakmont, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Sep. 11, 1981, Ser. No. 301,446
Int. Cl.³ C07C *3/18*
U.S. Cl. 585—525 8 Claims

1. A process for producing a mixture of olefin oligomers which comprises contacting an olefin having from about six to about 20 carbon atoms or a mixture thereof with a catalyst comprising boron trifluoride and a cocatalyst comprising between about 50 and about 98 weight percent of an aliphatic alcohol having from one to about ten carbon atoms, between about one and about 25 percent of an aliphatic ketone having from three to about ten carbon atoms and about one to about 25 percent of a polyol selected from ethylene glycol, propylene glycol, butane diol and glycerine.

4,436,948

CATALYST COMPOSITIONS

Rex L. Bobsein, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 7, 1982, Ser. No. 415,202
Int. Cl.³ C07C *2/02;* B01J *27/06*
U.S. Cl. 585—532 11 Claims

1. A catalyst composition suitable for use inthe oligomerization of olefins comprising at least two metal containing components wherein:

the first component contains one or more Group IIIA metal halides and the second component contains one or more metal halides selected from Group IVB metals and the catalyst contains metal components in about equal amounts based on their atomic weights.

6. A process of oligomerizing olefins comprising subjecting them to oligomerization conditions in the presence of a catalyst containing:

(1) a Group IIA metal halide, and

(2) at least one other metal halide selected from Group IVB metals, wherein the catalyst contains metal components in about equal amounts based on their atomic weights.

4,436,949

OLEFIN CONVERSION PROCESS

John W. Myers, and Daniel J. Strope, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 21, 1982, Ser. No. 420,970
Int. Cl.³ C07C *5/24, 5/30*
U.S. Cl. 585—664 19 Claims

1. A process for the conversion of at least one olefin which comprises adding to said olefin at least 0.10 mole percent of water and thereafter contacting the resulting wet olefin with an acidic alumina catalyst.

4,436,950

SYSTEM FOR SEALING PASSAGES IN THE WALLS OF GLANDLESS CIRCULATING PUMPS OR THE LIKE

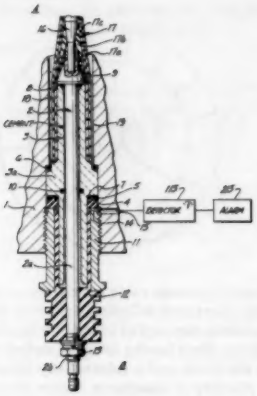
Karl Gaffal, Hessheim, and Christian Klepp, Frankenthal, both of Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Filed Jan. 6, 1982, Ser. No. 337,329

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1981, 3103299

Int. Cl.³ H01B *17/30*

U.S. Cl. 174—11 BH 18 Claims



1. A system for sealing a passage which is provided in a wall separating a higher-pressure area from a lower-pressure area and serves to allow for the transmission of electrical energy from a source in one of said areas to a consumer in the other of said areas, comprising an annular non-magnetic seat provided in the passage and having a predetermined inner diameter; an elongated conductor adapted to be introduced into said passage from the lower pressure area, said conductor extending through said passage and having in said higher-pressure area a portion with an outer diameter exceeding said predetermined inner diameter and being urged toward said seat owing to the pressure differential between said areas; cable means connected with said conductor in said higher-pressure area; a rigid pressure- and temperature-resistant insulating sleeve surrounding said conductor in said passage and bearing against said seat; a tubular insulating device surrounding said portion of said conductor and a portion of said sleeve in said higher-pressure area; a flexible insulating sheath sealingly surrounding said device; and a sealing element interposed between said conductor and said sleeve in the region of said portion of said conductor.

4,436,951

SEMICONDUCTOR POWER MODULE

Rolf Rief, Mannheim, and Peter Wetzel, Weinheim-Lützelsachsen, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

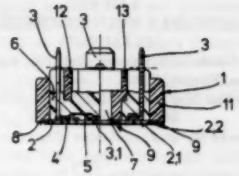
Filed Jul. 17, 1981, Ser. No. 284,335

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1980, 3028178

Int. Cl.³ H05K *5/00*

U.S. Cl. 174—52 PE 10 Claims

1. Semiconductor power module, comprising a substantially prismatic plastic housing with a lower surface having a recess with a shoulder-like step formed in the periphery thereof, a ceramic plate being inserted into said step and having an outer flat surface extending beyond said lower surface of said housing and an inner flat surface facing the interior of said housing, metallizations, semiconductor components and solder jumpers disposed on said inner surface of said ceramic plate, external contact elements being disposed on said inner surface of said ceramic plate and being freely accessible from on top of said housing, said housing including a frame having an open top and bottom, a central fastening part having a lower surface and having a hole formed therethrough for fastening the module to a heat sink, and radially-directed spokes extended between said frame and said central fastening part, said ceramic plate being



braced against said lower surface of said central fastening part and having a breakthrough formed therein in alignment with said through hole, said spokes being disposed at a distance from said ceramic plate defining a space therebetween, and each of said external contact elements being separated from each other by at least one spoke, and hardened insulating casting compound filling substantially half of the interior of said housing.

4,436,952

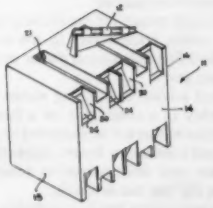
CABLE CLAMPING DEVICE INTEGRALLY FORMED WITH PLASTIC MOLDED ELECTRICAL BOX

Alan C. Lockwood, 4526 Darlow Ave., Rosemead, Calif. 91770

Filed Dec. 28, 1981, Ser. No. 335,247

Int. Cl.³ H02G *3/08*

U.S. Cl. 174—65 R 8 Claims



1. In a molded electrical box having a plurality of walls with broad outside surfaces a clamping device integrally formed with said box for clamping a member to said box, said member passing from the outside of the box to the interior thereof through an aperture formed in a wall of said box, said clamping device comprising

a single resilient finger member hinged at one end thereof to one of the walls of said box and extending away from said wall at an acute angle relative to the broad outside surface of said wall, said finger member being free of the box at the sides and the other end thereof, said finger member being positioned in said aperture,

tab means formed on said free other end of the finger member for use in prying said finger member away from said clamped member to permit the removal or repositioning thereof, said tab means being in the form of a strip having at least one flat surface, the flat surface of said tab means being positioned directly opposite an-inside wall of said box,

means for establishing a limiting position to the bending of said finger member comprising a projection formed on a

surface of said finger member facing towards the interior of said box, and

strip means extending from an inner wall of said box against which the projection abuts with the finger member in said limiting position,

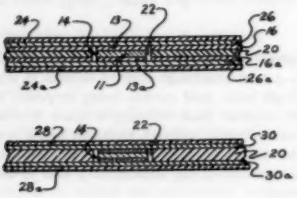
the member passing from the outside to the inside of the box being clamped in said aperture between the finger member and the wall portions forming said aperture.

4,436,953

BUS BAR ASSEMBLY WITH DISCRETE CAPACITOR ELEMENTS

Michael M. Gottlieb, Kraainem, Belgium, assignor to Rogers Corporation, Rogers, Conn.

Filed Mar. 31, 1981, Ser. No. 249,392
Int. Cl.³ H01B 7/00
U.S. Cl. 174—72 B 9 Claims



1. A bus bar assembly including:

centrally disposed electrically insulating spacer means having at least one opening therein;

capacitor means in said opening in said spacer means, said capacitor means including a layer of dielectric material having a pair of opposed first and second planar surfaces with first and second respective electrically conductive layers on each of said planar surfaces;

first and second bus bar means positioned on opposite sides of said capacitor means;

first and second means for connecting said first and second bus bar means respectively to the conductive layers on each of said first and second planar surfaces of said capacitor means; and

said first and second connecting means being comprised of an assembly of a conductor on a flexible substrate, with the conductor thereof in electrical contact with said first and second conductive layers, respectively, of said capacitor means, and said assemblies retaining said capacitor means in the bus bar assembly.

6. A high capacitance bus bar assembly including:

centrally disposed electrically insulating spacer means having first and second opposed planar surfaces and at lease one opening therein;

capacitor means in said opening in said spacer means, said capacitor means having a layer of dielectric material with first and second opposed planar surfaces with electrically conductive layers thereon;

first and second bus bar means, said first bus bar means being on said first surface of said spacer means and said second bus bar means being on said second surface of said spacer means; and

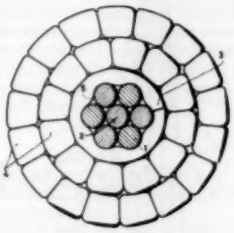
each of said bus bar means being comprised of an assembly of a flexible nonconductive substrate and a conductor on the substrate, the conductor of said first bus bar means bridging said opening in said spacer means on said first surface of said spacer means and being in electrical contact with the electrically conductive layer on said first planar surface of said capacitor means, and the conductor of said second bus bar means bridging said opening in said spacer means on said second surface of said spacer means and being in electrical contact with the electrically conductive layer of said second planar surface of said capacitor means.

4,436,954

STEEL-CORED ALUMINUM CABLE

Gyula Kaderjak, Bathory I.u.26/a, 3532 Miskolc, III; Albert Veres, Selyemret u.2.II.1, 3527 Miskolc; Istvan Barkoczy, Kommün u.2., 3530 Miskolc, and Janos Lonecsak, Barathegyalja u.54., 3532 Miskolc, III, all of Hungary

Continuation of Ser. No. 135,514, Mar. 31, 1980, abandoned, which is a continuation of Ser. No. 934,588, Aug. 17, 1978, abandoned. This application Aug. 3, 1981, Ser. No. 289,191
Claims priority, application Hungary, Aug. 19, 1977, DE 939
Int. Cl.³ H01B 5/10
U.S. Cl. 174—128 R 10 Claims



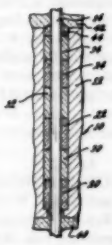
1. A steel-cored aluminum cable for electric power conduction, comprising a steel core including a plurality of steel wires, an aluminium coating disposed all around the wires and formed from an aluminium sheet having an inner surface pressed into direct contact therewith and a substantially cylindrical outer surface and a plurality of aluminium staples disposed around the aluminium coating ans upset into direct contact with the cylindrical outer surface of the aluminium coating along the entire innermost circumferential surface of the aluminium staples to impart a trapezoidal cross-section to each of the staples.

4,436,955

TERMINAL ASSEMBLY

James C. Kyle, 2547 Fisher Rd., Roseburg, Oreg. 97470

Filed May 15, 1981, Ser. No. 264,066
Int. Cl.³ H01B 17/26; C03C 27/02, 3/22
U.S. Cl. 174—152 GM 23 Claims



9. In combination,

a ferrule,

a terminal pin disposed in spaced relationship to the ferrule,

first layers made from a first ceramic insulating material and disposed in spaced relationship to one another in the space between the terminal pin and the ferrule and fused to adjacent ones of the terminal pin and the ferrule, the first ceramic insulating material having properties of withstanding considerable pressures without any deterioration in the fused relationship with the terminal pin and the ferrule, and

second layers made from a second ceramic insulating mate-

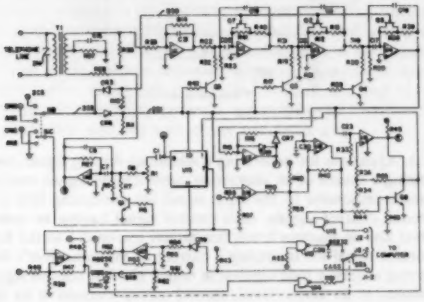
rial and disposed in spaced relationship in the space between the terminal pin and the ferrule and between the first layers and fused to adjacent ones of the terminal pin and the ferrule and the first layers, the second ceramic insulating material having properties of withstanding elevated temperatures without any deterioration in the fused relationship with the terminal pin and the ferrule.

4,436,956

SWITCHABLE BANDPASS FILTER

Paul T. Schreiber, Fort Worth, Tex., assignor to Tandy Corporation, Forth Worth, Tex.

Filed Dec. 29, 1981, Ser. No. 335,553
Int. Cl.³ H03H *11/12*
U.S. Cl. 179—2 C **10 Claims**



1. An electronic bandpass filter for use in a device which requires bandpass filtering with at least two distinct center frequencies and which generates a control signal to select said center frequency, said filter having an input for receiving signals from said device and comprising,

at least one filter section having an active signal gain element and at least two passive frequency selecting elements

means responsive to said control signal for selectively connecting said frequency selecting elements to said active element to select the center frequency of said filter, and

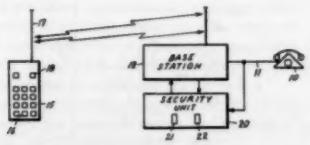
gain means connected in series with said input and said filter section and having a signal gain relative to the signal gain of said filter section so that substantially the entire signal gain of said filter results from said gain means.

4,436,957

TELEPHONE SECURITY SYSTEM FOR CORDLESS TELEPHONY

Frank J. Mazza, Edison, and John DeFilippis, South Amboy, both of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 22, 1981, Ser. No. 333,528
Int. Cl.³ H04M *1/66*; H04Q *7/04*
U.S. Cl. 179—2 EA **17 Claims**



1. In a cordless telephone system of the type having a base unit coupled to a telephone line and for transmitting to and receiving signals from a remote unit associated with said base unit, said remote unit also capable of transmitting to and receiving signals from said base unit, said base unit capable of causing said telephone line to go "off-hook" when requested by said remote unit to cause dial tone to be transmitted to said remote unit, the combination therewith of apparatus for preventing the transmission of dial tone from said base unit to said remote unit until authorized, said apparatus comprising:

means for storing a predetermined signal code in said base unit;

means located in said base unit for receiving signals transmitted by said remote unit when it is desired to transmit a dial tone to said remote unit from said base unit, said signals including signals indicative of said predetermined code, and said means for receiving said signals including a first timing circuit operative to provide a timing interval of a given duration when a transition pulse is detected indicative of a dial signal, whereby if additional pulses are not received during said interval said telephone is inhibited from receiving said dial tone;

means associated with said base unit for comparing said signals received from said remote unit with said stored signals indicative of said predetermined signal code in order to detect a favorable comparison therebetween; and

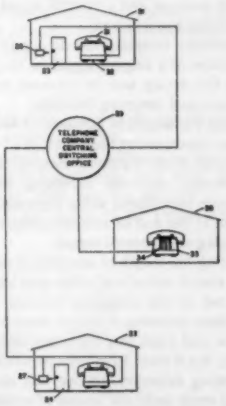
means for activating said telephone line to transmit said dial tone from said base unit to said remote unit when a favorable comparison is made.

4,436,958

SYSTEM USING THE TELEPHONE NETWORK TO CONTROL LOCKS AT A NUMBER OF REMOTE LOCATIONS

Robert C. Hansen, Orland Park, and Paul G. Novorolsky, Carol Stream, both of Ill., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Jun. 30, 1982, Ser. No. 393,992
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—2 A **16 Claims**



1. A system for selectively operating a device in response to a sequence of telephone call multifrequency dial pulses, which comprises:

means responsive to each multifrequency dial pulse for generating a transfer signal;

a sequence circuit responsive to second and third telephone call multifrequency dial pulses and a termination of each accompanying transfer signal for producing output signals;

a first timing circuit operated by a first of said sequence telephone multifrequency call dial pulses for producing an enabling signal that enables said sequence circuit to respond to said second and third telephone call dial pulses within a first predetermined time; and

a second timing circuit responsive to operation of said se-

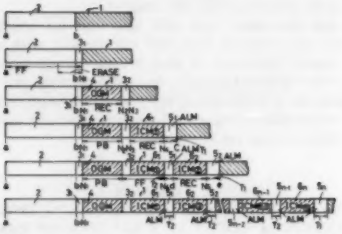
quence circuit for operating the device for a second predetermined period of time whereafter the second timing circuit reverts to an initial setting.

4,436,959

AUTOMATIC TELEPHONE ANSWERING DEVICE

Takashi Nakatsuyama, Kawasaki, and Yoshitomo Nakano, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 29, 1981, Ser. No. 268,189
Claims priority, application Japan, Jun. 9, 1980, 55-77483
Int. Cl.³ A04M *11/10*
U.S. Cl. 179—6.09 **19 Claims**



1. A method of automatically answering phone calls on a phone line and recording messages from calling parties in sequence on a single magnetic tape with a magnetic tape device having a stop mode, a rewind mode, a forward mode, and a fast-forward mode comprising the steps of:

providing a magnetic tape having recorded thereon an outgoing message and a control signal indicating the end of said outgoing message;

automatically coupling the device to the phone line upon detection of a ringing signal on the phone line;

setting the device into its forward mode and playing said prerecorded outgoing message;

detecting the length of advance of said magnetic tape, with values representing the length of advance at the beginning and end of the outgoing message and at the end of any previously recorded incoming message being stored, wherein said stored value representing the length of advance at the end of said outgoing message is determined by using said control signal;

comparing the length of advance of said magnetic tape with said stored values and when said length corresponding to the end of the outgoing message is reached and if no previous incoming messages have been recorded, recording in said track any incoming message from the calling party, but if there have been previously recorded any such incoming messages, setting said device into its fast-forward mode until the length of advance corresponding to the end of the last such previously-recorded incoming message is detected, and then setting said device into its forward mode and recording the incoming message from the calling party;

upon termination of the incoming message, storing the value representing the length of advance at the end thereof, and setting the device into its rewind mode;

detecting said length of advance as said tape is rewound, and comparing said detected length of advance with said stored values; and

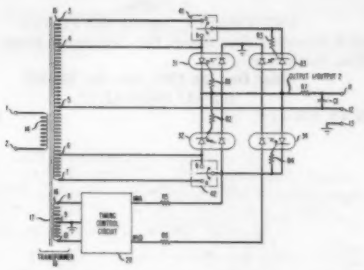
when said detected length of advance corresponds to the stored value representing the beginning of said outgoing message, setting said device into its stop mode, thereby conditioning the device to greet any subsequent calling parties by playing back said recorded outgoing message.

4,436,960

TELEPHONE RINGING SIGNAL GENERATOR

William R. Harmon, Jr., Burlington, N.C., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 11, 1982, Ser. No. 338,224
Int. Cl.³ H04M *5/12*
U.S. Cl. 179—51 AA **8 Claims**



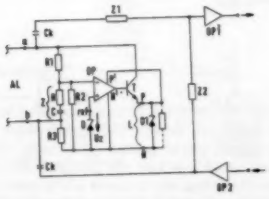
1. Apparatus for generating a telephone ringing signal comprising a source of an alternating current input signal, control means responsive to the input signal for generating first and second control signals, each control signal having an active level and an inactive level, first means responsive to the first control signal for supplying a current to the subscriber's line during at least a time interval in which the first control signal subsists at an active level, second means responsive to the second control signal for supplying a current to the subscriber's line during at least a time interval in which the second control signal subsists at an active level, the current from the first means being in an opposite direction to the current from the second means, the first control signal having a frequency equal to the frequency of the second control signal, the frequency of the first or second control signal being substantially equal to the frequency of the ringing signal, and the frequency of the ringing signal being substantially less than the frequency of the alternating current input signal.

4,436,961

COMMUNICATIONS SYSTEM CONNECTING CIRCUIT FOR CONTROLLING DERIVATION OF OPERATING POWER FROM SUBSCRIBER LINE CURRENT

Thomas Heilig, Spiegelberg, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 22, 1981, Ser. No. 285,867
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1980, 3027783
Int. Cl.³ H04B *1/58*; H04M *1/76, 19/00*
U.S. Cl. 179—77 **4 Claims**



1. A circuit arrangement for connecting a communications set, defining a subscriber loop containing a load to be supplied with operating power, to a subscriber line of a subscription

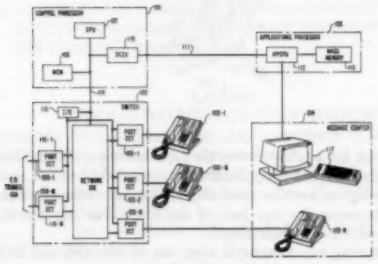
communication network in which each subscriber line includes two wires between which the communications set is conductively connected, said circuit arrangement comprising: an operational amplifier having a noninverting input, an inverting input and an output; a setting transistor connected to have its conductive state controlled by the signal at said amplifier output and connected for influencing the current flowing between the two wires of the associated line and through the subscriber loop; a voltage divider connected between the two wires of the subscriber line and having a center tap connected to the inverting input of said amplifier for applying to said amplifier inverting input a voltage proportional to the voltage between the two wires of the associated line ; a measuring resistor connected to conduct the current flowing through the subscriber loop and connected between one wire of the line and the noninverting input of said amplifier; a source of a reference voltage connected between said measuring resistor and said noninverting input of said amplifier; and a second resistor connected between said inverting input of said amplifier and the end of said reference voltage source remote from said amplifier noninverting input; and wherein the load to be supplied with operating power is connected in series between said transistor and one wire of the associated line.

4,436,962

CALL COVERAGE ARRANGEMENT

Richard A. Davis, Boulder; Susan K. Harris, Northglenn, and Bernard R. Jones, Arvada, all of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 30, 1982, Ser. No. 363,422
Int. Cl.³ H04M *3/50*; H04Q *3/64*
U.S. Cl. 179—18 B **38 Claims**



1. A method of providing call coverage service for a principal station in a telephone system having a storage memory and serving a plurality of stations, comprising the steps of

storing call coverage criteria in memory specifying conditions under which calls directed to the principal station will be redirected to coverage,

storing in memory identifications of a plurality of call covering stations for the principal station and an order of preference of the call covering stations, and

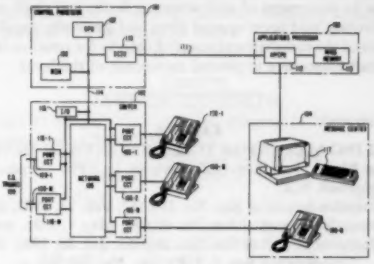
in response to a call intended for the principal station from a calling station and satisfying the coverage criteria, redirecting the call to coverage from the principal station sequentially to each of the covering stations in the order of preference until the call is answered or abandoned.

4,436,963

IMPLIED PRINCIPAL ADDRESSING IN A CALL COVERAGE ARRANGEMENT

Jennie L. Cottrell, Arvada; Richard A. Davis, Boulder; Susan K. Harris, Northglenn; Bernard R. Jones, Arvada, and John Y. Payseur, Thornton, all of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 30, 1982, Ser. No. 363,423
Int. Cl.³ H04M *3/50*
U.S. Cl. 179—18 B **18 Claims**



1. In a telephone system having a storage memory and serving a plurality of telephone stations, a method of providing call handling operations at a call covering station, comprising the steps of

redirecting calls intended for ones of a prescribed group of principal stations to the call covering station under prescribed circumstances,

automatically identifying an intended principal station responsive to a signal from the covering station on a said call redirected to the covering station, and

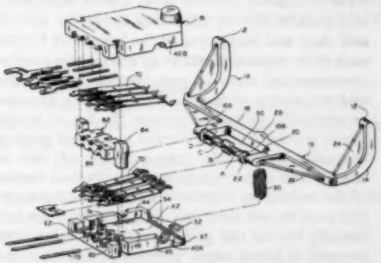
executing a call processing operation specified by the signal with respect to the principal station identified in the immediately preceding step.

4,436,964

HOOKSWITCH MECHANISM FOR TELEPHONE INSTRUMENT

Steve W. Haskins, Corinth, Miss., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 14, 1981, Ser. No. 302,179
Int. Cl.³ H01H *21/06, 21/24, 21/82*; H04M *1/08*
U.S. Cl. 179—164 **9 Claims**



1. An electrical hookswitch mechanism, for use in a telephone instrument for actuating a plurality of contact spring sets on each operation of the mechanism, comprising: an actuating lever for said mechanism, a plurality of sets of leaf springs, each spring comprising an elongated body portion with a contact at one end thereof stepped from the body portion, each set of springs including a spring in a first parallel alignment and a spring in a second parallel alignment, a rotatable camshaft positioned between the first and second align-

ments, a plurality of cams on said camshaft with each cam positioned between springs of a set along the body portion thereof, first and second oppositely directed lobes on each cam, each said lobe having a spring engaging surface adapted to engage a respective one of the springs of the set between which the cam is positioned, an encloaing housing surrounding said springs and cams, with lateral extensions of said camshaft extending out of said housing at each end to enable coupling of the camshaft to said actuating lever for causing rotation of said camshaft and consequent actuation of spring contacts in response to movement of said actuating lever, and shaft means for pivoting said lever spaced from and generally parallel to the axis of the camshaft and coupled thereto for rotation of said camshaft responsive to pivotal movement of the lever.

4,436,965

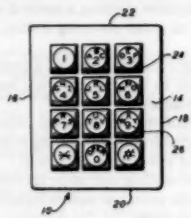
SEALING MEANS FOR TELEPHONE COVER DEVICE

Milton Morse, Fort Lee, N.J., assignor to APM Corporation, Englewood, N.J.

Continuation-in-part of Ser. No. 236,757, Feb. 23, 1981, and a continuation-in-part of Ser. No. 61,647, May 7, 1981, and a continuation-in-part of Ser. No. 286,063, Jul. 23, 1981. This application Sep. 4, 1981, Ser. No. 299,509

Int. Cl.³ H02M *1/23*

U.S. Cl. 179—184 **8 Claims**



1. A protective cover for the push-button array of a push-button telephone set, comprising:

a flexible elastomeric sheet having a grid of upwardly-directed pockets, each of said pockets being defined by substantially vertical side-walls rising above the main plane of said sheet and an upper top portion extending across the tops of said vertical walls, the adjacent vertical walls of adjacent pockets being spaced from each other; said pockets thereby extending above the said plane of said sheet and being open at the lower end for receiving each of the buttons of said array and thereby overlying the corresponding array of push-buttons on said telephone; said top portion of each said pocket being provided with an upwardly protruding portion, the lateral periphery of which is inward of said vertical walls; said pockets being elastically depressible independently of one another toward their open ends, to permit individual displacement of the underlying telephone set push-buttons received in said pockets; said sheet including a skirt portion extending laterally beyond said grid and said sheet being continuous between its lateral edges, whereby said entire push-button array is overlaid by said cover and thereby protected from spillage of liquids or other environmental hazards; and

a gasket for effectively sealing said protective cover to said telephone set, said gasket being adapted to extend completely around the periphery of the elastomeric sheet, said gasket being flexible and adherent to the elastomeric sheet and the telephone set; and said gasket having covers on opposite sides thereof which are removable for attachment of the gasket, by the application of pressure, to the elastomeric sheet and the telephone set, respectively.

4,436,966

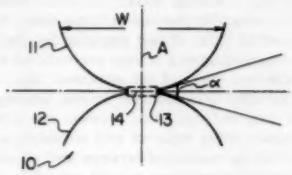
CONFERENCE MICROPHONE UNIT

Radamis Botros, Nepean, Canada, assignor to Darome, Inc., Harvard, Ill.

Filed Mar. 15, 1982, Ser. No. 358,293

Int. Cl.³ H04R *19/04, 1/32*

U.S. Cl. 179—121 D **9 Claims**



1. A microphone unit comprising a bidirectional acousto-electric transducer of the cosine-response type disposed in proximity to, and between, two dish-like back-to-back sound collectors each having an aperture therein exposing one of two active, opposite surfaces of said acousto-electric transducer, whereby said microphone unit exhibits substantially rotational symmetry around a central axis of bidirectionality.

4,436,967

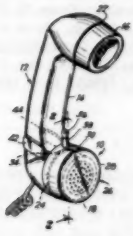
TELEPHONE LOCK

Eric S. Cohen, c/o Cose Technology Corp., 15 E. 40th St., New York, N.Y. 10019

Filed Mar. 11, 1982, Ser. No. 357,306

Int. Cl.³ H04M *1/66*

U.S. Cl. 179—189 R **9 Claims**



1. A lock for a telephone of the type having apertured caps threadedly mounted at opposite end regions of a handset, each cap forming an annular generally U-shaped, externally-open groove between the end face of the respective cap and the handset, said lock comprising:

(a) a locking cup mountable over one of the caps, said locking cup having a shield portion for overlying the apertures in said one cap, and an annular generally cylindrical skirt portion depending from the shield portion and covering the groove formed by said one cap to thereby prevent across to the groove;

(b) means for preventing sound from passing through the apertures of said one cap when the locking cup is mounted thereon; and

(c) means on the locking cup for locking the same on said one cap, said locking means including a stationary locking element fixedly mounted on the skirt portion and extending into and within the groove a predetermined location along the periphery of the groove, and a manually-operated movable locking element mounted on the locking cup for displacement between a retracted position in which the movable locking element is located exteriorly

of the groove, and a locked position in which the movable locking element extends into and within the groove and lockingly engages said one cap at another location along the periphery of the groove which is spaced remotely from said predetermined location, to thereby prevent unauthorized use of the telephone.

4,436,968

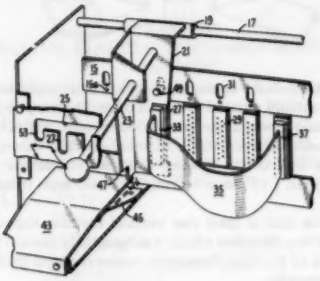
MULTIPLE POSITION SWITCH

Joe D. Giulie, P.O. Box 51350, Palo Alto, Calif. 94303

Filed Dec. 10, 1981, Ser. No. 329,342

Int. Cl.³ H01H *9/00, 15/00, 19/00*

U.S. Cl. 200—5 R **21 Claims**



1. A switch for connecting a plurality of conductors to one of a plurality of ports, comprising in combination:

a. at least one first connector of the plug-in type having a plurality of contacts therein, said contacts being connected to individual wires of flexible multiple conductors,

b. a plurality of complementary second connectors of the plug-in type mounted on a frame and facing in the same direction, each having contacts complementary to the contacts of a first connector,

c. a lever arm attached to said first connector and mounted for restricted movement on said frame and having a handle thereon, whereby:

d. an operator can actuate said handle to move said first connector to a selected one of said second connectors and plug said connectors together.

4,436,969

TIMING DEVICE FOR TIME SWITCH

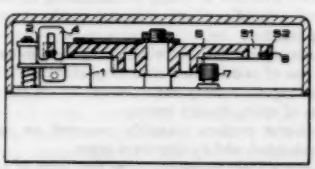
Yoshiaki Motoki, Hiroshima, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1982, Ser. No. 368,127

Claims priority, application Japan, Apr. 15, 1981, 56-57393; Apr. 15, 1981, 56-57394

Int. Cl.³ H01H *7/00, 43/00;* **F16H** *53/00*

U.S. Cl. 200—38 R **7 Claims**



1. A timing device for time switch comprising:

(a) a scale plate rotated at a constant rate and having plug-in portions involving slots and grooves corresponding to a time scale on the circumferential part thereof,

(b) presetting elements to be inserted to fit into said plug-in portions of said scale plate,

(c) an operating lever shifted by said presetting elements to turn a switch on,

(d) said scale plate comprising a plastic guide portion to serve to position said presetting elements and to keep the position of each presetting element inserted in the prescribed position, and

(e) a metallic body inserted in said plastic guide portion of said scale plate in such manner that the periphery of the metallic body extrudes into said slots and grooves, whereby said presetting elements resiliently engage the periphery of said metallic body.

4,436,970

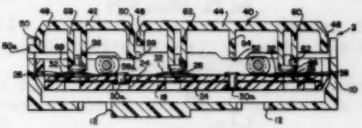
SWITCH ASSEMBLIES

William F. Swisher, Carthage, Ill., assignor to Methode Electronics, Inc., Chicago, Ill.

Filed Jun. 7, 1982, Ser. No. 385,496

Int. Cl.³ H01H *9/00, 1/06*

U.S. Cl. 200—61.56 **16 Claims**



6. A switch assembly comprising:

body means supporting first and second electrical contacts in normally open relationship,

said first electrical contact having a raised tactile area capable of being deformed for movement in response to the application of a force thereto,

an actuator member mounted adjacent said tactile area to apply a force thereto and cause said first electrical contact to contact said second contact for creating an electrical connection,

said tactile area being formed by a warped section of said first electrical contact,

said first electrical contact having a slit provided on one side of said warped section to separate said warped section from a border section adjacent an edge of said first electrical contact, said first electrical contact having at least one connecting section joining said border section at one end of said slit, and

the length of said border section is physically shortened relative to said warped section to create said raised tactile area.

4,436,971

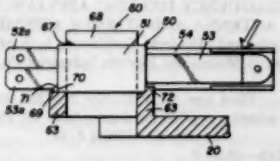
SNAP-IN SWITCH MOUNTING STRUCTURE

Syng N. Kim, Hoffman Estates, Ill., assignor to Wico Corporation, Niles, Ill.

Filed Apr. 23, 1982, Ser. No. 371,513

Int. Cl.³ H02B *5/00*

U.S. Cl. 200—295 **13 Claims**



8. Structure for mounting a leaf spring switch having a body

which carries at least two leaf springs, said body having a height and a width and a length, said mounting structure comprising two side abutments spaced apart a distance about equal to the width of the body, upper and lower abutments spaced apart a distance about equal to the height of the body, front and rear abutments spaced apart a distance about equal to the length of the body, and an upwardly and rearwardly directed ramp in front of said rear abutment, the leaf spring switch being mounted by placing the body on top of said front abutment and beneath said upper abutment and between said side abutments, then pushing the body rearwardly until engagement with said ramp and continuing to push said body rearwardly to cause said body to ride up said ramp and onto said lower abutment.

4,436,972

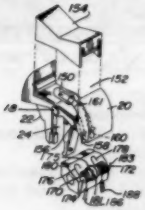
CIRCUIT PROTECTOR HAVING A LAMP WITHIN ITS HANDLE AND TERMINALS THEREFOR

William F. Scanlon, New Hope, Pa., assignor to Heinemann Electric Company, Lawrenceville, N.J.

Continuation-in-part of Ser. No. 183,959, Sep. 3, 1980, Pat. No. 4,338,586. This application Apr. 5, 1982, Ser. No. 365,155

Int. Cl.³ H01H 9/16

U.S. Cl. 200—315 2 Claims



1. In a circuit protector or the like
a handle,
a case from which said handle extends,
an electrical lamp within said handle,
a first pair of terminals secured to said handle and to said lamp,
a second pair of terminals carried by said case,
electrical leads extending from said second pair of terminals to a pair of springs,
said springs having end portions engageable by said first pair of terminals,
said springs are carried by a post integral with said case,
said end portions rest upon a boss formed on said case,
said first pair of terminals press upon said end portions to close the circuit to said lamp,
said springs are formed by a plurality of coils and said coils are mounted about said post,
an insulating spacer between said coils, and
said electrical leads have end portions stripped of insulation and wedged between adjacent coils of said springs.

4,436,973

HIGH FREQUENCY HEATING APPLIANCE WITH AN ANTENNA AND STIRRER ASSEMBLY

Nobuo Ikeda, and Hirofumi Yoshimura, both of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

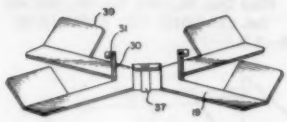
Filed Apr. 12, 1982, Ser. No. 367,601

Claims priority, application Japan, May 15, 1981, 56-73701

Int. Cl.³ H05B 6/74

U.S. Cl. 219—10.55 F 7 Claims

1. A high frequency heating appliance comprising:
a heating chamber having a plurality of walls and disposed in a main body of said appliance;
a high frequency oscillator, having a dipole antenna and having a stirrer fan which is made from a metallic plate and which is used for stirring high frequency waves radiated from said high frequency oscillator toward the interior of said heating chamber, said stirrer fan having a rotary shaft concentric with said dipole antenna;
wherein said stirrer fan includes a plurality of stirrer blades and further includes at least one vertical metallic segment which is arranged so as to be substantially parallel to said dipole antenna and located adjacent thereto, said at least one vertical segment of said stirrer fan further including a



horizontal metallic subsegment which is arranged so as to be substantially parallel to a wall of said heating chamber having said dipole antenna installed thereon, and wherein the distance between said horizontal metallic subsegment and said wall of the heating chamber is selected to be shorter than $\frac{1}{4}$ of the wavelength of said high frequency waves;
and wherein said at least one vertical metallic segment is disposed in a direction which is substantially normal to the direction of the high frequency waves radiated from said dipole antenna.

4,436,974

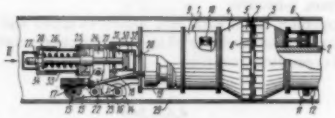
PIPE RESISTANCE BUTT WELDING APPARATUS

Vladimir K. Lebedev; Sergei I. Kuchuk-Yatsenko; Vasily A. Sakharnov; Boris A. Galian; Grigory B. Asoyants, and Vladimir I. Tishura, all of Kiev, U.S.S.R., assignors to Institut Elektrosvarki Imeni E.O.Patona Akademii Nauk Ukrainskoi SSR, Kiev, U.S.S.R.

Filed Aug. 19, 1981, Ser. No. 294,416

Int. Cl.³ B23K 11/04, 37/04

U.S. Cl. 219—66 3 Claims



1. A pipe resistance butt welding apparatus comprising:
(a) a body having an elongated carrying member;
(b) an internal expanding clamp including current-feeding shoes and rigidly attached to said body;
(c) an internal expanding clamp including current-feeding shoes and movably mounted on said elongated carrying member for axial motion;
(d) a drive intended to enable reciprocating motion of said internal expanding clamp mounted on the elongated carrying member;
(e) a trimming mechanism for removing flash, mounted on at least one of said internal expanding clamps;
(f) centering supporting rollers mounted on the body by means of spring-loaded levers;
(g) three-arm rockers rotatably mounted on said body, spring-loaded, and having three arms;
(h) driving wheels mounted on the first arms of said three-arm rockers so as to be movable between first positions engaged with the internal surface of pipe being welded and second positions disengaged from the internal surface;
(i) a rotation drive enabling rotation of said wheels and mounted on said body;
(j) additional supporting rollers mounted on the second arms

of said three-arm rockers so as to movable between positions disengaged from the internal surface and positions engaged with the internal surface, said additional supporting rollers being in the disengaged positions thereof when said driving wheels are in engaged positions and said additional supporting rollers being in the engaged positions thereof when said driving wheels are in disengaged positions; and

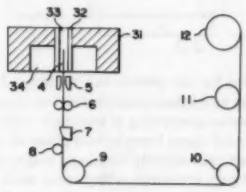
(k) a power cylinder mounted on said body and having a rod connected with the third arms of said three-arm rockers for controlling movement of said three-arm rockers.

4,436,975

WIRE-CUT, ELECTRIC DISCHARGE MACHINING METHOD

Yoshiyuki Nomura; Kanemasa Okuda, both of Hino, and Hisao Ishii, Mitaka, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Jul. 29, 1981, Ser. No. 288,188
Claims priority, application Japan, Aug. 4, 1980, 55-106857
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 W **3 Claims**



1. A wire-cut, electric discharge machining method in which a wire is inserted into a machining start hole made in a workpiece to start electric discharge machining from the machining start hole, comprising the steps of:

(a) forming a bushing of a conductive material; and

(b) increasing the conductivity of the start hole by pressing the bushing into a start hole made in the workpiece to provide the machining start hole.

4,436,976

ELECTROEROSION MACHINING METHOD AND APPARATUS WITH AUTOMATIC VIBRATIONS-SENSING ELECTRODE WEAR COMPENSATION

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Oct. 23, 1981, Ser. No. 314,432
Claims priority, application Japan, Oct. 27, 1980, 55-149368
Int. Cl.³ B23P *1/00, 1/12*
U.S. Cl. 219—69 V **22 Claims**

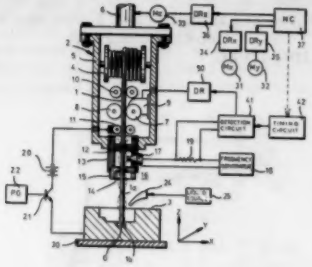
1. A method of electroerosively machining a workpiece with a tool electrode, comprising the steps of:

supporting said tool electrode to bring its free end portion defining a machining electrode face into spaced juxtaposition with the workpiece and to define a machining gap therewith;

flooding said machining gap with a machining liquid;

causing said free end portion of the tool electrode to transversely vibrate at a given frequency;

passing an erosion machining current between said tool electrode and said workpiece to electroerosively remove material from the workpiece while permitting said machining electrode face to erosively wear; and



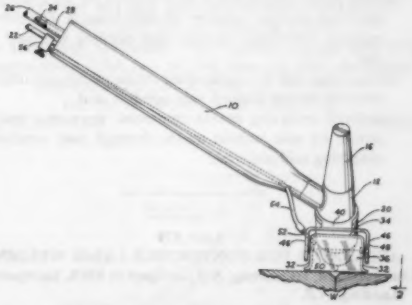
sensing the erosive wear of said tool electrode by sensing a change in the mode of said vibrations.

4,436,977

INERT GAS DISTRIBUTOR ATTACHMENT FOR ARC WELDING TORCHES

Daniel L. Cash, Rte. 2 Box 667, Corbett, Oreg. 97019, and Frank L. Stoddard, 3510 NE. Dorchester Way, Corvallis, Oreg. 97330

Filed Dec. 4, 1981, Ser. No. 327,700
Int. Cl.³ B23K *9/16*
U.S. Cl. 219—75 **6 Claims**



1. For use with an inert gas arc welding torch, an inert gas distributor comprising:

(a) a hollow housing having an open bottom side,

(b) gas inlet means on the housing for communicating a source of inert gas with the interior of the housing for exit through said open bottom side, and

(c) support means pivotally engaging the housing for supporting the same,

(d) the support means being arranged for mounting on an inert gas arc welding torch to dispose the housing adjacent the torch electrode and trailing the direction of movement of the torch during welding for directing inert gas over a sufficient length of produced weld to allow the weld to cool to a temperature at which it is not substantially adversely effected by atmospheric oxygen and nitrogen,

(e) the pivotal engagement of the support means with the housing being arranged to allow pivotal movement of the torch relative to the housing on an axis substantially perpendicular to the direction of movement of the torch during welding for adjusting the angle of the torch while maintaining the open bottom end of the housing closely adjacent or in sliding contact with the surface of the work being welded.

4,436,978

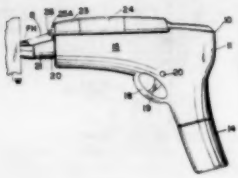
SAMPLING DEVICE

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 831,778, Aug. 18, 1977, Pat. No. 4,237,364. This application Dec. 2, 1980, Ser. No. 212,313

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LC 2 Claims



1. In a tool for operating on work with intense radiation, the combination comprising:

a housing having an opening therein,

means supported within said housing for generating an intense radiant energy beam and directing said radiant energy beam through said opening at work located adjacent said opening wherein said beam is of sufficient intensity to vaporize material located in alignment with said opening,

a sampling conduit supported by said housing adjacent said opening in said housing and having an opening for receiving material vaporized by said intense radiant energy beam intersecting work adjacent said opening,

suction means connected to said conduit for generating and applying suction pressure to said conduit for drawing material vaporized adjacent said opening into said conduit,

means supported by said housing for receiving and retaining material drawn through said conduit, and

a material analyzing means connected to receive material drawn by said suction means through said conduit for analyzing said material.

4,436,979

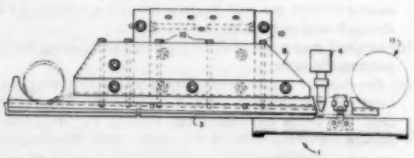
APPARATUS FOR CONTINUOUS LASER WELDING

Carl J. Nilsen, Hopatcong, N.J., assignor to SWS, Incorporated, Landing, N.J.

Filed May 6, 1982, Ser. No. 375,586

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LC 25 Claims



1. Apparatus for continuous laser welding adjacent longitudinally extending edges of generally tubular shaped members comprising Z-bar guide means for positioning and guiding said edges as the members are moved toward a welding area with a laser welding means for welding said edges, and a mandrel connected to said Z-bar guide means and extending internally and in the direction of movement of said members, said mandrel including laser beam dump means positioned adjacent said welding area for absorbing light from a laser beam produced by said laser welding means.

4,436,980

ELECTRIC ARC WELDING APPARATUS

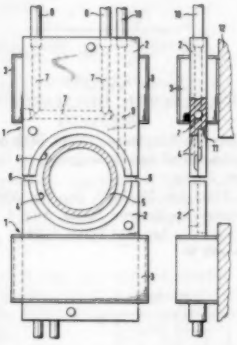
Norbert Pache, Augsburg, and Karel Mazac, Friedberg, both of Fed. Rep. of Germany, assignors to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed May 12, 1981, Ser. No. 262,906

Claims priority, application Fed. Rep. of Germany, May 13, 1980, 3018199

Int. Cl.³ B23K *9/08*

U.S. Cl. 219—123 10 Claims



1. An apparatus for the electric arc welding of two annular workpieces along an endless annular weld seam path lying in a plane, said apparatus comprising at least two radially extending flat unipolar magnet cores lying in said plane of said path and having juxtaposed ends directly forming a magnetizable ring in the plane of said path and surrounding same, each of said cores carrying a respective electromagnet coil, mutually juxtaposed ends of said cores being of circular arc segments forming said ring directly, the ends of said cores having faces juxtaposed with said seam end of an area no greater than respective cross sections of said cores surrounded by said coils said circular arc segments substantially completely enclosing said path in a substantially closed ring and having respective chord lengths of at most the width of the portions of the magnet cores surrounded by said coils in said plane.

4,436,981

VERTICAL DOWN WELDING PROCESS BY GRAVITY ARC WELDING AND WELDING MACHINE THEREFOR

Noboru Sakamoto; Itaru Yamashita; Satoshi Wada; Kenichi Yano, and Suehiro Oda, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

PCT No. PCT/JP81/00123, § 371 Date Jan. 29, 1982, § 102(e) Date Jan. 29, 1982, PCT Pub. No. WO81/03453, PCT Pub. Date Dec. 10, 1981

PCT Filed Jun. 2, 1981, Ser. No. 346,074

Claims priority, application Japan, Jun. 2, 1980, 55-74092; Jun. 25, 1980, 55-88130[U]; Jun. 25, 1980, 55-88131[U]

Int. Cl.³ B23K *9/12*

U.S. Cl. 219—124.32 2 Claims

2. A downward welding machine comprising:

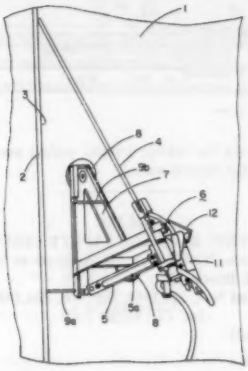
a guide rail comprising; a main rail and a sub-rail and disposed upwardly slanted with respect to a vertical weld line;

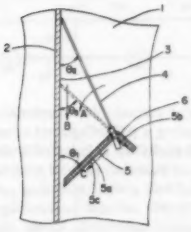
said sub-rail terminating at its lower end with the upper end of said main rail and being adapted such that the angle between a welding rod and a vertical weld line is continuously increased from an initial angle of at least 20° up to an angle in a range between 35° and 80° with a descent of a welding rod holder supporting said welding rod along said sub-rail from the upper end to the lower end thereof;

said main rail extending from the lower end of said sub-rail

being straight so that said angle between 35° and 80° between said welding rod and vertical weld line is maintained while said welding rod holder is lowered along said main rail from the upper end to the lower end thereof;

said welding rod holder capable of lowering gravity along said guide rail, said welding rod being securedly set in said welding rod holder so that it cannot be rotated with respect thereto; and





a support base having a triangular or like shape, the lower end of said guide rail being supported on said support base at or in the vicinity of the intersection of two sides thereof other than the largest side, said support base having magnetic holder members attached to its back at the other two intersection points than said guide rail support point and also at least two positioning rods extending from its edge facing said vertical weld line, one end of each said positioning rod being rotatable with respect to said support base.

4,436,982

TWO ELECTRODE WELDING WITH DIFFERENT CURRENTS SUPPLIED TO THE ELECTRODES

Satoshi Kokura, Hitachiota; Masayasu Nihei, Hitachi; Hiroshi Wachi, Hitachi; Hiromi Mashida, Hitachi, and Kousaku Senda, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 19, 1981, Ser. No. 323,027

Claims priority, application Japan, Nov. 21, 1980, 55-163347

Int. Cl.³ B23K *9/09*

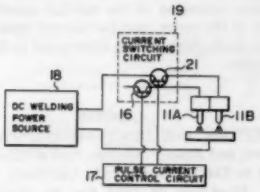
U.S. Cl. 219—130.51 **15 Claims**

1. A two electrode welding method wherein welding is carried out by means of arcs struck between two electrodes and a parent metal, said two electrodes being a leading electrode and a trailing electrode located in side-by-side, spaced-apart relation in a direction in which the welding surface advances and movable relative to the parent metal, said method comprising the steps of:

passing a welding current alternately to the leading and trailing electrodes;

controlling the value of a peak current supplied to the leading electrode to be a value higher than that of a peak current supplied to the trailing electrode;

controlling the value of a time distribution rate of the peak current supplied to the trailing electrode to be a value



higher than that of a time distribution rate of the peak current supplied to the leading electrode;

preheating a portion of the parent metal by the heat of the arc struck between the leading electrode and the parent metal; and

melting the preheated portion of the parent metal by the heat of the arc struck between the trailing electrode and the parent metal when the former has moved to a position above the preheated portion of the latter.

4,436,983

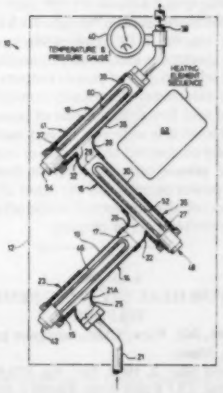
ELECTRIC WATER HEATER WITH UPWARDLY INCLINED ZIG-ZAG FLOW PATH

Leo A. Solobay, 410 Quebec Ave., Toronto, Canada M6P 2V4

Continuation of Ser. No. 242,952, Mar. 12, 1981, abandoned. This application Jan. 3, 1983, Ser. No. 455,087

Int. Cl.³ H05B *1/02, 3/82;* **F24H** *1/20*

U.S. Cl. 219—306 **8 Claims**



1. An electric water heater having an inlet, an outlet and a series of consecutive pipe sections in a zig-zag configuration through which water successively flows in passing from the inlet to the outlet, the zig-zag configuration being such that, when the heater is in use with the pipe sections one above the other, each pipe section is upwardly inclined to the horizontal at an acute angle of at least about 30 degrees such that water flows in an upwardly inclined direction through each pipe section, each pipe section having a first end, a second open end and a side wall with an opening adjacent to the first end, each

pipe section having a unitary tubular member fitted thereon adjacent said first end, said tubular member having a lateral tubular extension communicating with said side wall opening, each pipe section having an electric immersion heater therein extending longitudinally of the pipe section from the first end thereof and past which water passing through the pipe section flows, said tubular member supporting the immersion heater at said first end, the lateral tubular extension of the tubular member on the first pipe section in the series being connected to one of said inlet and outlet, the second open end of each pipe section in the series other than the last being connected to the lateral tubular extension of the tubular member on the next pipe section in the series, and the second open end of the last pipe section in the series being connected to the other of said inlet and outlet.

4,436,984

ELECTRIC ARC DISCHARGE APPARATUS

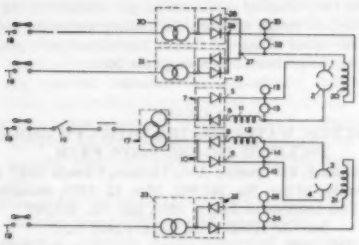
Alan L. Hare, and Allan P. George, both of Cleveland, England, assignors to Tioxide Group PLC, Cleveland, England

Filed Nov. 18, 1982, Ser. No. 442,715

Claims priority, application United Kingdom, Dec. 10, 1981, 8137291

Int. Cl.³ H05B *7/18*

U.S. Cl. 219—383 **9 Claims**



1. An electric discharge apparatus which comprises a power supply comprising a multi-phase transformer, arc stabilisation means and two or more rectifier bridges each bridge providing a pair of power outputs, a first pair of electrodes with one of said first pair of electrodes electrically connected to one power output of a first selected pair of power outputs and the other of said first pair of electrodes electrically connected to the other power output of said first selected pair of power outputs and a second pair of electrodes with one of said second pair of electrodes electrically connected to one power output of a second selected pair of power outputs different from the said first selected pair of power outputs and the other of said second pair of electrodes electrically connected to the other power output of said second selected pair of outputs.

4,436,985

APPARATUS FOR HEAT TREATING SEMICONDUCTOR WAFERS

T. Jerome Weber, Mt. View, Calif., assignor to GCA Corporation, Bedford, Mass.

Filed May 3, 1982, Ser. No. 373,978

Int. Cl.³ F26B *3/30;* **H05B** *1/00*

U.S. Cl. 219—388 **2 Claims**

1. Apparatus for heat treating semiconductor wafers, said apparatus comprising:

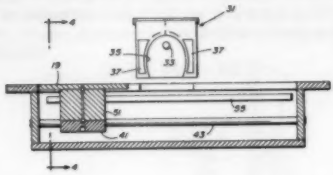
infrared source means including a linear high intensity lamp and a linear reflector focusing radiation from said lamp on a linear target zone;

a vacuum chuck for holding a wafer to be treated;

a heat sink on the opposite side of said zone from said lamp;

means for traversing said chuck through the region between said source and said sink from a first station on one side of the course to a second station on the other side of said source thereby to cause said zone to sweep the surface of a wafer held by said chuck;

air track means for transporting wafers to be treated to said chuck at said first station; and



air track means for taking treated wafers away from said chuck at said second station.

4,436,986

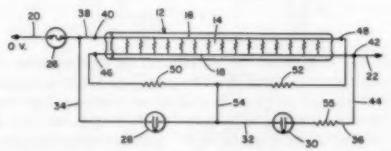
ELECTRIC BLANKET SAFETY CIRCUIT

Gordon S. Carlson, Northbrook, Ill., assignor to Sunbeam Corporation, Oak Brook, Ill.

Filed Nov. 23, 1981, Ser. No. 324,196

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—505 **17 Claims**



1. In an electrical circuit, the combination comprising a heating cable including a pair of spaced conductors separated throughout their lengths by a layer of positive temperature coefficient resistance material, each of said conductors having a power supply end and a sensing end, a power supply cord connected to said cable at said power supply ends of said conductors to connect said cable to an alternating current power supply, a current responsive switching means in series with one of said conductors, a sensing means connected to said sensing ends of said conductors, said sensing means including a pair of series connected impedance elements, a pair of gas tube elements connected in series between said power supply ends of said conductors, the junction of said impedance elements and the gas tube elements being connected together, said gas tube elements being nonconducting under normal operating conditions and conducting when shorts or open circuit conditions occur in said conductors, said gas tube elements having sufficient current capacity in the conducting state to activate said switching means in series with said cable.

4,436,987

WELD CONNECTION FOR PLASTIC PIPE

Alfred Thalmann, and Fritz Reich, both of Uhwiesen, Switzerland, assignors to Georg Fischer Aktiengesellschaft, Switzerland

Filed Sep. 27, 1982, Ser. No. 424,240

Claims priority, application Switzerland, Oct. 2, 1981, 6349/81

Int. Cl.³ H05B *3/58*

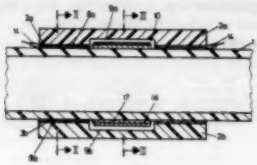
U.S. Cl. 219—535 **12 Claims**

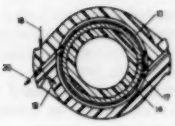
1. An apparatus for forming a weld connection with plastic pipe, comprising

first and second molded plastic parts, each of said parts having an internal surface corresponding to a peripheral portion of the pipe being welded such that said internal surfaces define a cavity for receiving and enclosing the

pipe, said parts being separated by first and second longitudinally extending clearances; and

first and second heating mats adjacent said internal surfaces of said first and second parts, respectively, each of said





mats having one end portion in one of said clearances and comprising a resistance wire coated with plastic, said mats completely covering said internal surfaces and the pipe periphery to be welded.

4,436,988

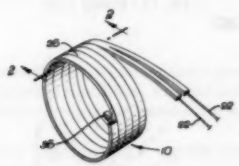
SPIRAL BIFILAR WELDING SLEEVE

James J. Blumenkranz, Hollywood, Calif., assignor to R & G Sloane Mfg. Co., Inc., Sun Valley, Calif.

Filed Mar. 1, 1982, Ser. No. 353,158

Int. Cl.³ H05B *3/44*

U.S. Cl. 219—544 **13 Claims**



1. A spiral bifilar welding sleeve for positioning between two thermoplastic members to be bonded together, said sleeve comprising;

an elongated thermoplastic sheath of generally rectangular cross-section, having a pair of short sides and a pair of long sides;

a pair of electrically conductive wires embedded within said sheath in a spaced, generally parallel relationship; and

coupling means for electrically coupling said wires together at one end of said sheath, said wires at the other end being adapted for connection to an electrical current source, said sheath being wound into a plurality of turns defining a generally spiral coil with the short sides of adjacent turns being bonded together, said sheath being fusible when electrical current is passed through said wires to bond the thermoplastic members with respect to each other.

4,436,989

CASH DRAWER FOR CASH REGISTERS IN TELLERS' STATIONS, SALES COUNTERS OR THE LIKE

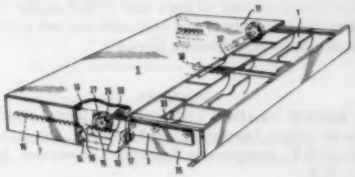
Gerhardt Schuldt, Oerlinghausen, Fed. Rep. of Germany, assignor to ADS - Anker GmbH, Bielefeld, Fed. Rep. of Germany

Filed Nov. 24, 1981, Ser. No. 324,431

Claims priority, application European Pat. Off., Aug. 14, 1981, 81 106 327

Int. Cl.³ G07G *1/00*

U.S. Cl. 235—22 **11 Claims**



1. Cash drawer for cash registers in tellers' stations, sales counters or the like, comprising a slide-in unit and a drawer tray being movable into and out of said slide-in unit in given directions; said slide-in unit having vertical side plates at opposite sides thereof, a rib being integral with each of said side plates extended along said given directions and projecting toward each other, a rack integral with the top of each of said ribs, and a roller disposed in vicinity of the front of each of said side plates; a guide shaft being rotatably supported at the back of said drawer tray, a pinion being fastened to each end of said guide shaft and being in engagement with one of said racks of said side plates; and said drawer tray having sides and a longitudinal flange integral with each of said sides of said drawer tray being extended along said given directions and supported on said rollers when the drawer is opened and closed.

4,436,990

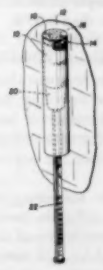
COUNTING DEVICE

Michael R. Saccucci, 445 Pineda St., Cocoa, Fla. 32922

Filed Jul. 16, 1982, Ser. No. 399,883

Int. Cl.³ G06C *27/00*

U.S. Cl. 235—1 R **7 Claims**



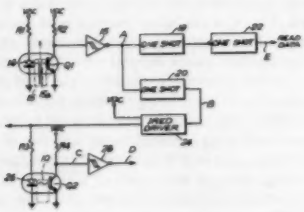
1. A device for counting the cups remaining inside a tubular cup dispensing device, said device being of the type which has an open lower end and means at said open lower end to permit one at a time dispensing of cups in a nested column of cups inside said device while preventing the entire nested column of cups from falling out of said cup dispensing device all at once, said cup dispensing device comprising a closed upper end and spring means to normally urge the column of cups therein towards said open lower end, said counting device comprising a shaft and at least one end member fixed at one end of said shaft, at least one scale means on said shaft starting from said at least one end member and extending along said shaft away from said end member, said counting device being so sized as

to fit into said open lower end of said cup counting device with said end member in contact with the lowermost one of said column of nested cups, said shaft having a length sufficiently long to permit use of said shaft to push via said end member against said column of cups and to compress said spring means to its fully compressed minimum length; and each of said at least one scale means being calibrated for all of a particular size and type of cup and for a particular length of cup counting device and spring means therein; whereby the lower end of said cup counting device will be positioned with respect to said scale means in the said fully compressed minimum length position of said column of cups and of said spring means to read directly in number of said particular size and type of cups in said particular cup counting device.

4,436,991
BADGE READER USING INFRARED LIGHT

Gordon H. Albert, Larchmont, and Harvey M. Feinman, Bronx, both of N.Y., assignors to Sealectro Corporation, Mamaroneck, N.Y.

Filed Mar. 10, 1982, Ser. No. 356,789
Int. Cl.³ G06K 7/10
U.S. Cl. 235—468 **8 Claims**



1. Apparatus for determing whether portions of an identification badge are relatively opaque or transparent to infrared radiation upon movement of said badge relative to said apparatus comprising:

identification means on said badge including relatively transparent portions having an infrared transmissivity of at least 2% for passing infrared radiation incident thereon, and relatively opaque portions having infrared transmissivity of not more than 0.05%;

a source of infrared radiation;

detector means for sensing infrared radiation and producing an output signal in response thereto;

alignment means for detecting the alignment of said relatively opaque or transparent portions of said badge with said source and detector means and for producing an alignment signal upon the occurrence of a predetermined alignment;

activating means for activating said source to produce a pulse of infrared radiation having a first pulse width in response to the production of an alignment signal, which radiation is sensed by said detector means when a relatively transparent portion of said badge is aligned therewith;

means for receiving output signals from said detector means and producing an indication signal in response thereto;

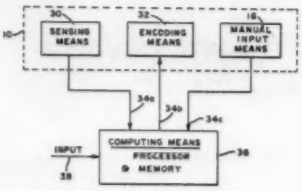
means for utilizing said indication signal in response to a readout signal; and

data strobe means for receiving said alignment signal and producing said readout signal in response thereto, said readout signal having a second pulse width approximately one-quarter of that of said first pulse width and being timed to occur substantially during the last quarter of said pulse of infrared radiation, whereby the indication signal is utilized during said last quarter.

4,436,992
CHECK CONTROLLED METERING DEVICE

Luther G. Simjian, 1750 S. Ocean La., Ft. Lauderdale, Fla. 33316

Continuation-in-part of Ser. No. 223,239, Jan. 8, 1981. This application Sep. 2, 1982, Ser. No. 414,414
Int. Cl.³ G06F 7/08
U.S. Cl. 235—381 **6 Claims**



1. In a check controlled metering device, such as a check controlled postage meter, the combination comprising:

an apparatus having check acceptance means for receiving a check having coded data thereon;

sensing means cooperatively associated with said check acceptance means for sensing the coded data on a check received by said acceptance means;

input means associated with said apparatus for inputing data related to rendering the metering device operable;

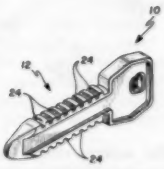
computing means including means for receiving and storing credit data adapted to be coupled to said sensing means and said input means for receiving said sensed coded data and said data from said input means and processing the received data and providing a meter charge code responsive to the received data and credit data stored in said computing means being in predetermined relation, and

encoding means associated with said check acceptance means for encoding a check received in said acceptance means with said meter charge code.

4,436,993
ELECTRONIC KEY

William P. Flies, Burnsville, Minn., assignor to Datakey, Inc., Burnsville, Minn.

Filed Jan. 11, 1982, Ser. No. 338,366
Int. Cl.³ H04Q 3/00
U.S. Cl. 235—382 **6 Claims**



1. A key-like device having head and insert-body portions, the insert-body portion being adapted for insertion into a receptacle and rotation therein to a "locked" position and including:

two sets of generally oppositely disposed spaced grooves transversely extending over the surface of the insert-body of the key so as to be in alignment with the rotational movement of the insert-body when rotated in a receptacle,

an electrical circuit element encapsulated within the key,

a plurality of spaced electrical contacts formed by a plurality of electrical leads connected to the electrical circuit element, each of the leads extending outwardly from the key body and lying in a respective groove thereby forming a plurality of spaced electrical contacts on the key body,

each contact having a certain contact dimension in each respective groove and defining leading and trailing ends with respect to the rotational direction of key rotation, and

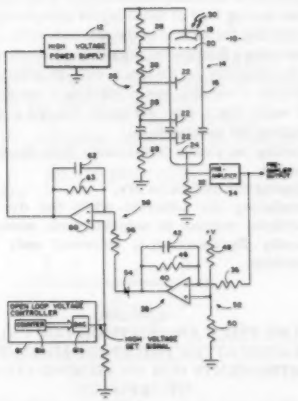
at least one switch contact in a respective groove, the switch contact having a certain contact dimension defined by leading and trailing ends which is smaller than that of the spaced electrical contacts, the leading ends of the switch contact being spaced behind the leading ends of the other contacts with respect to rotation to the "locked" position whereby switch contact is 37 made" after the other contacts are "made."

4,436,994

PHOTOMULTIPLIER DETECTOR PROTECTION DEVICE AND METHOD

James G. Van Vliet, La Habra, and James R. Brown, Huntington Beach, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 28, 1981, Ser. No. 334,810
Int. Cl.³ H01J *31/50*
U.S. Cl. 250—207 **10 Claims**



1. An improved photomultiplier detector protection system wherein an adjustment signal from external means adjusts the sensitivity of the photomultiplier detector, the system comprising:

a power supply for generating a variable output voltage in response to a control signal;

a photomultiplier detector responsive to incident light flux and to the power supply output voltage for generating an output related to the incident light flux and the magnitude of the power supply output voltage;

reference means for generating a reference signal proportional to a predetermined photomultiplier detector output;

comparator means responsive to the reference signal and responsive to the photomultiplier detector output for comparing the reference signal and the photomultiplier detector output to generate an output when the reference signal and the photomultiplier detector output are in a predetermined relationship;

means for receiving the adjustment signal; and

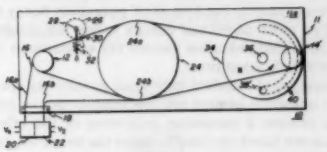
summing means responsive to the adjustment signal from the receiving means and to the comparator means output for generating the control signal by summing the adjustment signal and the comparator means output.

4,436,995

FIBER OPTICS TRANSDUCERS FOR SENSING PARAMETER MAGNITUDE

James R. Whittea, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,266
Int. Cl.³ G02B *5/14*
U.S. Cl. 250—227 **11 Claims**



1. A transducer for providing an electrical signal of magnitude responsive to the magnitude of a mechanical displacement to be sensed, comprising:

a continuous optical fiber having first and second ends;

transmitter means for introducing a quantity of optical energy into the first end of said fiber;

detector means, coupled to the second end of said fiber, for converting the magnitude of optical energy received thereat to the magnitude of an electrical signal forming the transducer output;

a fixed member; and

a movable member having a spacing from said fixed member varying responsive to the magnitude of the mechanical displacement to be sensed;

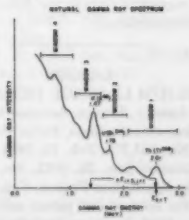
said fiber forming at least one loop with each loop formed about and enclosing both said fixed and movable members, and having a variation in the optical attenuation losses through said fiber due to microbending induced by a change in the radius-of-curvature of said at least one fiber loop responsive to a change in the mechanical displacement between said members, to cause a variation in the detector means output signal.

4,436,996

BOREHOLE COMPENSATED KUT LOG

Dan M. Arnold; Harry D. Smith, Jr., and Ward E. Schultz, all of Houston, Tex., assignors to Halliburton Company, Duncan, Okla.

Filed May 21, 1981, Ser. No. 265,736
Int. Cl.³ G01V *5/00*
U.S. Cl. 250—256 **35 Claims**



1. A method of natural gamma ray spectral logging of a well borehole to determine the relative elemental constituency of uranium, potassium and thorium in earth formations penetrated by a well borehole, substantially independently of borehole conditions, comprising the steps of:

obtaining, with a borehole measurement system standard individual gamma ray spectra of uranium, potassium and thorium bearing earth formations penetrated by well bore-

holes having standard geometrical and constituent properties;

obtaining, with a borehole measurement system, an unknown gamma ray energy spectrum in a measurement borehole having unknown borehole conditions, said unknown gamma ray spectrum being divided into gamma ray intensities measured in at least four energy bands corresponding to a first energy band containing the 2.61 MeV thorium decay peak, a second energy band containing the 1.76 MeV uranium decay peak, a third energy band containing the 1.46 MeV potassium decay peak, and one or more additional energy bands for monitoring the shape of said unknown gamma ray spectrum as a function of borehole conditions;

comparing said standard individual gamma ray spectra with said unknown gamma ray spectrum to derive by an iterative process a parameter indicative of the effect of the unknown borehole conditions on the unknown gamma ray spectrum;

compensating said standard gamma ray spectra as a function of said parameter indicative of said unknown borehole conditions to derive a set of compensated standard gamma ray spectra; and,

comparing said compensated standard gamma ray spectra with said unknown gamma ray spectrum to derive borehole compensated relative constituencies of uranium, potassium, and thorium in said unknown borehole.

4,436,997

METHOD FOR THE DETERMINATION OF CLAY AND MICA CONCENTRATIONS IN SUBSURFACE SANDSTONE FORMATIONS THROUGH RADIOACTIVE LOGGING

Linus S. Allen, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 21, 1981, Ser. No. 295,059
Int. Cl.³ G01V *5/00*
U.S. Cl. 250—256 **3 Claims**

1. A method for determining the clay content of a subsurface sandstone formation from a record of the natural gamma radiation of the thorium, uranium and potassium trace elements in said formations, comprising the steps of:

(a) producing a first measurement of the difference in the total and the potassium gamma-ray activities of the interval of interest,

(b) producing a second measurement of the difference in the total and the potassium gamma-ray activities in a clean sandstone interval,

(c) producing a third measurement of the difference in the total and the potassium gamma-ray activities in a mica-free shale interval, and

(d) identifying the volume fraction of clay content in the interval of interest as the ratio of the difference of said first and second measurements to the difference of said second and third measurements.

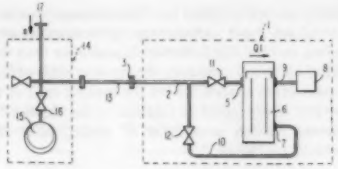
4,436,998

HELIUM LEAKAGE DETECTOR

Jacques Tallon, Annecy, France, assignor to Compagnie Industrielle des Telecommunications, Paris, France

Division of Ser. No. 233,236, Feb. 10, 1981, Pat. No. 4,365,158. This application Dec. 20, 1982, Ser. No. 451,691
Claims priority, application France, Feb. 11, 1980, 80 02923
The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.
Int. Cl.³ B01D *59/44*
U.S. Cl. 250—288 **3 Claims**

1. In a helium leakage detector having no vane pump, and including a molecular diffusion pump (6) having an inlet (5) and outlet (7), and a measuring spectrometric cell connected in a branch circuit from said diffusion pump, wherein the improvement comprises a bypass conduit connecting said outlet (7) to an inlet connection to a structure to be tested, and restriction means connected between said inlet (5) of said diffusion pump (6) and said inlet connection to said structure to be



tested, whereby the necessity of using a vane pump is avoided, allowing a recirculating loop of gas to be maintained within the system for some period of time for measuring purposes.

4,436,999

STRUCTURAL DEFECT DETECTION

Werner Kern, Hightstown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 8, 1982, Ser. No. 386,240
Int. Cl.³ G01N *1/30*
U.S. Cl. 250—302 **7 Claims**

1. A method of detecting microdefects in the surface layer of a substrate having two or more layers comprising:

(a) contacting the surface of the substrate with a composition comprising a fluorescent organic compound characterized by the capacity to fluoresce only in solution, dimethyl sulfoxide, a suitable lower alkanol, a suitable surfactant and water for a time sufficient for the composition to penetrate the microdefects;

(b) draining the excess composition from the surface of the substrate;

(c) allowing the surface to dry;

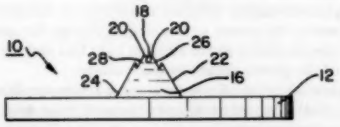
(d) irradiating the substrate while the dye in the microdefects remains in solution with actinic radiation, whereby fluorescence is activated only in the microdefects.

4,437,000

APERTURE PIECE AND METHOD FOR CALIBRATING BACKSCATTER THICKNESS MEASURING INSTRUMENTS FOR MEASURING CONCAVE WORKPIECES

Jacques Weinstock, Flushing, N.Y., assignor to UPA Technology, Inc., Syosset, N.Y.

Filed Mar. 20, 1981, Ser. No. 245,936
Int. Cl.³ G01N *23/00*; G01D *18/00*
U.S. Cl. 250—308 **2 Claims**



1. An aperture piece for use in conjunction with backscatter type apparatus for measuring the thickness of a thin coating on a concave surface of a workpiece substrate comprising

a planar base section having a central aperture therein,

an outwardly extending and progressively tapering hollow boss in the general form of a truncated cone mounted over said central aperture, said hollow boss having a longitudinal axis and outwardly terminating in a small rectangular aperture in the extending end thereof defined by a pair of

spaced parallel elongate edges and a pair of spaced parallel short edges disposed perpendicular to said elongate edges,

said rectangular aperture being of markedly smaller areal extent than said central aperture in said base section,

the external surface of the base portion of said boss being selectively shaped to include a first pair of diametrically opposed planar converging surfaces disposed parallel to the elongate defining edges of said small rectangular aperture and with the projected included angle between said first pair of surfaces being bisected by the longitudinal axis of said boss,

the external surface of the upper portion of said boss being further selectively shaped to include a second pair of diametrically opposed planar converging surfaces disposed parallel to the elongate defining edges of said small rectangular aperture and with the projected included angle between said second pair of surfaces being bisected by the longitudinal axis of said boss,

said second pair of converging surfaces having the upper defining edges thereof disposed in closely adjacent relation with said elongate defining edges of said small rectangular aperture to define a narrow perimetric sample support surface thereabout and defining a projected included angle that is less than the projected included angle between said first pair of converging planar surfaces.

4,437,001

CORONA GENERATING APPARATUS

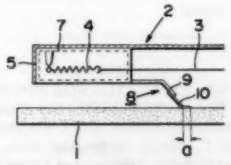
Yoshiaki Harada, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 20, 1981, Ser. No. 265,376

Claims priority, application Japan, May 31, 1980, 55-73869; Sep. 26, 1980, 55-134980

Int. Cl.³ H01T *19/04*

U.S. Cl. 250—324 **4 Claims**



1. In a corona generating apparatus for charging a photosensitive surface, including a corona wire spaced from the photosensitive surface and from which charge is generated and a regulating member disposed between the wire and the photosensitive surface for preventing the accumulation of charge on the surface in a region at which no image is to be formed, the corona wire and the regulating member each being disposed substantially parallel to the photosensitive surface, the improvement comprising an improved regulating member to closely and accurately define the boundary of the non-image region on the surface, comprising:

an extension of said regulating member substantially longitudinally along the corona wire, said extension including a pair of bends delineating therebetween a ramp and a contact portion extending from the bend most remote from the regulating member, said contact portion being disposed substantially parallel to and in at least close proximity to the photosensitive surface to shield the surface of charge generated by the corona wire and, by reason of its close proximity to the surface, thereby closely define the boundary of said non-image region, at least said contact portion being formed of a flexible material so as to prevent damage to the photosensitive surface in the event that said portion contacts the surface, and each of said bends being less than 90 degrees.

4,437,002

PYROELECTRIC INFRARED SENSOR

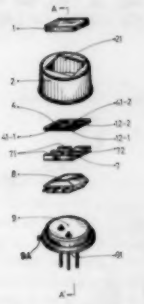
Yoshiharu Taniguchi; Shigeki Edano, and Masanori Akiyama, all of Tottori, Japan, assignors to Nihon Ceramic Co., Ltd., Tottori, Japan

Filed Apr. 15, 1981, Ser. No. 254,433

Claims priority, application Japan, Apr. 21, 1980, 55-55134[U]; Apr. 21, 1980, 55-55135[U]; May 9, 1980, 55-64031[U]

Int. Cl.³ G01J *1/42*

U.S. Cl. 250—338 **6 Claims**



1. A pyroelectric infrared sensor, comprising:

a can having a window with an optical filter attached thereto;

a pyroelectric ceramic element;

a field-effect transistor provided with electric terminals; and

a stem having a tab, wherein:

said pyroelectric ceramic element has two back electrodes on the back surface thereof and at least two front electrodes on the front surface thereof, each of said at least two front electrodes having a first region overlapping with a part of one of said back electrodes and a second region overlapping with a part of the other of said back electrodes;

each of said at least two front electrodes are arranged adjacent to each other and are electrically insulated from each other; and

said first regions and said second regions of said at least two front electrodes have a ratio of areas of approximately 1:1.

4,437,003

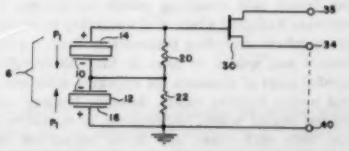
DIFFERENTIAL PYROELECTRIC SENSOR WITH STATIC DISCHARGE

Alan P. Doctor, Ormond Beach, Fla., assignor to Eltec Instruments, Inc., Orlando, Fla.

Filed Jul. 29, 1981, Ser. No. 287,883

Int. Cl.³ G01J *5/10*

U.S. Cl. 250—338 **11 Claims**



1. A two terminal differential thermal sensor comprising:

a pair of pyroelectric detectors connected in a series opposed connection, said detectors having two output electrodes and a common electrode; and

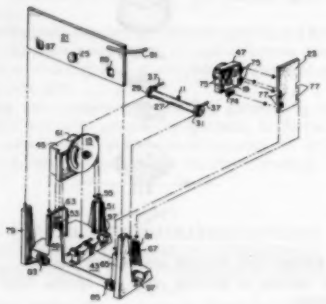
first resistor means connected between one of said output electrodes and said common electrode and second resistor means connected between the other of said output electrodes and said common electrode for bleeding static charges from said pair of detectors.

4,437,004

MODULAR GAS ANALYZER

Robert E. Passaro, and Irvin G. Burough, both of Walnut Creek, Calif., assignors to Andros Analyzers Incorporated, Oakland, Calif.

Filed Aug. 24, 1981, Ser. No. 295,485
Int. Cl.³ G01J *1/04*; G01N *21/01*
U.S. Cl. 250—343 **5 Claims**



1. In an infrared gas analyzer including a sample cell for containing the gas mixture to be analyzed, means for directing infrared energy through said sample cell, source means for periodically interrupting the infrared energy at a predetermined frequency, detector means responsive to infrared energy of at least one preselected wavelength for producing a signal having an amplitude proportional to the infrared energy passing through said sample cell and having a frequency corresponding to the predetermined frequency, said preselected wavelength corresponding to the characteristic absorption wavelength of a preselected gas, and signal processing means for processing the signal output of said detector means to produce a signal representative of the concentration of the preselected gas in the mixture being analyzed, the analyzer being a modular construction to facilitate assembly and replacement of components, comprising

a modular sample tube,

a modular source housing means for mounting the source of infrared energy at one end of said sample tube,

a modular detector housing means for mounting the detector means at the opposite end of said tube,

a printed circuit board mounting the signal processing means, and

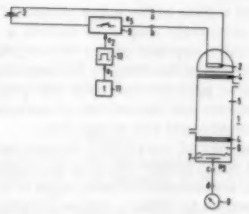
a mounting means for supporting said sample tube, source housing means, detector housing means and printed circuit board, said mounting means comprising a unitary structure including a base and a plurality of integral channel members extending transversely from the same side thereof and spaced in pairs to form three substantially parallel pairs of channels for engaging with and locating said source housing means, detector housing means and printed circuit board, respectively, in operative relationship with each other, and detent means for releasably securing said source housing means, detector housing means and printed circuit board in said channel members to enable said source housing means, said detector housing means and said printed circuit board to be readily removed individually for repair or replacement without the need to remove other modular elements.

4,437,005

NONDISPERSIVE INFRARED GAS ANALYZER

Paul-Arthur Ophoff, Wörth, and Johann Weinel, Karlsruhe, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 17, 1981, Ser. No. 322,210
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1980, 3043332
Int. Cl.³ G01J *1/00*
U.S. Cl. 250—343 **5 Claims**



1. A nondispersive infrared gas analyzer of the type having a plurality of gas-filled chambers arranged in the propagation path of modulated infrared radiation, and a measuring pickup for producing an electrical measurement signal, the nondispersive infrared gas analyzer further comprising:

pulsed energy supply means for producing electrical pulses having a duty cycle which is less than 1;

infrared radiation means for producing infrared radiation which is modulated in response to said duty cycle of said pulsed energy supply means, said infrared radiation means having a predetermined continuous power rating; and

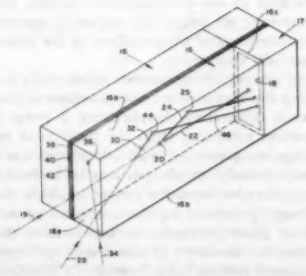
pulse control means for terminating each of said electrical pulses from said pulsed energy supply means in response to a peak value of a corresponding pulse in the electrical measurement signal.

4,437,006

METHOD AND APPARATUS FOR MEASURING RADIATION IN COMPUTER-ASSISTED TOMOGRAPHY AND RADIOGRAPHIC APPLICATIONS

Ira L. Morgan; E. C. George Sudarshan; Alvin L. Mitchell; James P. Coose; Hunter D. Ellinger, and James W. Jagger, all of Austin, Tex., assignors to Scientific Measurement Systems, Inc., Austin, Tex.

Division of Ser. No. 879,439, Feb. 21, 1978, Pat. No. 4,284,895. This application May 5, 1981, Ser. No. 260,695
Int. Cl.³ G01T *1/20*
U.S. Cl. 250—363 S **16 Claims**



1. Radiographic apparatus for determining the intensity of penetrating radiation passing through an object as a plurality of

penetrating ray photons along a plurality of respective paths from a radiation source; comprising:

(a) high-speed scintillator means having a very fast decay time for detecting the plurality of penetrating ray photons passing through the object along one of the plurality of paths and converting the energy of the penetrating ray photons into a plurality of light photons within a sufficiently short time interval after detection such that substantially all light photons associated with each detected penetrating ray photon are generated within different time intervals;

(b) photomultiplier means optically coupled to said scintillator means for detecting the light photons associated with each penetrating ray photon detected and generating a signal for each plurality of light photons associated with a penetrating ray photon detected; and

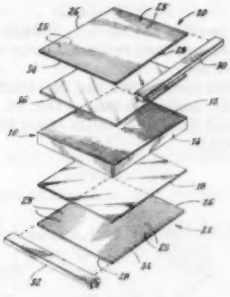
(c) counting means for counting the signals generated by said photomultiplier means and generating output signals representative of the number of penetrating ray photons detected.

4,437,007

LARGE ARRAYS OF DISCRETE IONIZING RADIATION DETECTORS MULTIPLEXED USING FLUORESCENT OPTICAL CONVERTERS

Evan E. Koslow, Westport, Conn., and Robert R. Edelman, Brookline, Mass., assignors to Koslow Technologies Corporation, Westport, Conn.

Filed Apr. 18, 1982, Ser. No. 366,472
Int. Cl.³ G01T *1/20*
U.S. Cl. 250—366 **22 Claims**



1. A radiation detection and conversion apparatus comprising:

an array of individual, optically isolated, radiation sensitive elements that emit optical radiation upon absorption of radiation stimuli;

an array of elongated, parallel channel means, each of said channel means being positioned to receive and trap optical radiation emitted by a plurality of said radiation sensitive elements and transporting said optical radiation therealong;

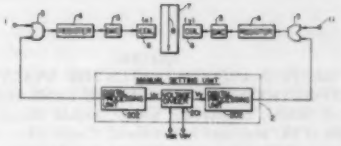
an array of electro-optical devices coupled to at least one end of said channels for converting the transported radiation into electrical signals whereby each such electrical signal indicates that at least one of said radiation sensitive elements has absorbed a radiation stimulus.

4,437,008

ELECTRON BEAM CONTROL SYSTEM

Tadahito Matsuda, Hohya; Masahide Okumura, Sagamihara; Hisatake Yokouchi, Tokyo; Susumu Ozasa, Kashiwa, and Yasuo Kato, Zama, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo and Hitachi, Ltd., both of, Japan

Filed Apr. 23, 1981, Ser. No. 256,682
Claims priority, application Japan, Apr. 23, 1980, 55-52888
Int. Cl.³ H01J *3/14*; G06M *3/14*
U.S. Cl. 250—396 R **4 Claims**



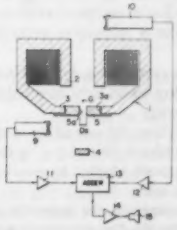
1. An electron beam control system having means for manually adjusting currents flowing through two deflection coils which respectively cause deflection of said beam in directions orthogonal to each other, said means for manually adjusting comprising means to simultaneously produce coil deflection control signals for controlling the current in said two deflection coils by the execution of a single operation, nonvolatile memory means for permitting the selective storage or readout of coil deflection control signals produced by the means to simultaneously produce coil deflection control signals and means for causing the selective application of previously stored coil deflection control signals or currently produced coil deflection control signals to the deflection coils whereby the readjustment of the position of the electron beam may be dispensed with after the control system is turned off and then turned on by the selective application of the stored control signals to the deflection coils.

4,437,009

SCANNING ELECTRON MICROSCOPE OR SIMILAR EQUIPMENT

Shigetomo Yamazaki, Hachioji, Japan, assignor to Kabushiki Kaisha Akashi Seisakusho, Tokyo, Japan

Filed Feb. 11, 1982, Ser. No. 347,863
Claims priority, application Japan, Mar. 3, 1981, 56-30266
Int. Cl.³ H01F *7/00*; G01N *23/00*
U.S. Cl. 250—396 ML **6 Claims**



1. A scanning electron microscope or similar equipment, comprising an electromagnetic objective lens having its lens center between the upper and lower poles thereof, an opening formed on the lower pole so that a specimen may be passed through the opening and placed in the vicinity of the lens center, and a magnetic pole piece defining an aperture having a diameter smaller than that of the opening and detachably provided in the opening so as to decrease the magnetic flux

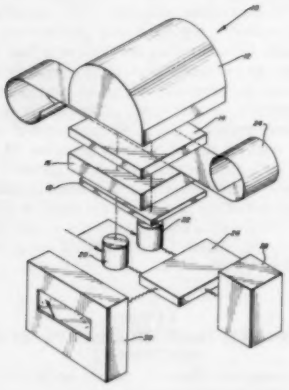
leaked through the opening when the specimen is placed below the lower pole.

4,437,010

METHOD AND APPARATUS FOR ANALYZING CONDITIONER ON A BOWLING LANE SURFACE

Carl E. Scheie, Libertyville, and G. Arnold Muma, Casnovia, both of Ill., assignors to Brunswick Corporation, Skokie, Ill.

Filed Dec. 21, 1981, Ser. No. 333,059
Int. Cl.³ F21V 9/16; G01N 21/64
U.S. Cl. 250—459.1 5 Claims



1. Apparatus for analyzing and evaluating the thickness and distribution of conditioning material applied to the surface of a bowling lane, the conditioning material treated with a fluorescent additive prior to application to the bowling lane surface, the apparatus adapted for analyzing the treated conditioning material which has been transferred onto an elongated transparent strip from a transverse section of the bowling lane surface;

the apparatus comprising, in combination:

a source of ultra-violet light directed to strike one side of the elongated strip;

a first photocell on the side of the strip opposite the one side for sensing blue light emitted by the fluorescent additive;

a second photocell adapted to receive light emanating from the source; and

means for comparing the intensity of light from the strip measured by the first photocell with the intensity of the light from the source measured by the second photocell whereby readings of intensity of light from the strip can be measured independently of variations in intensity of light from the source,

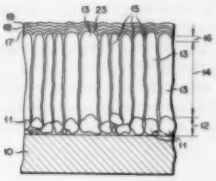
said light intensity from the strip being directly proportional to the quantity of conditioning material applied to finite portions of the transverse section of a bowling lane surface and correlated to the thickness and distribution of conditioning material transferred from the bowling lane surface.

4,437,011

RADIATION EXCITED PHOSPHOR SCREEN AND METHOD FOR MANUFACTURING THE SAME

Takashi Noji, Odawara; Norio Hapao, Ayase, and Yoshiharu Obata, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 11, 1981, Ser. No. 272,764
Claims priority, application Japan, Jun. 16, 1980, 55/80146; Feb. 17, 1981, 56/21934
Int. Cl.³ G01J 1/58
U.S. Cl. 250—486.1 12 Claims



1. A radiation excited input phosphor screen comprising:

a substrate having a substantially smooth surface;

a first phosphor layer vapor-deposited on said smooth surface of said substrate and including phosphor crystal particles having mean diameter of 15 μm or less; and

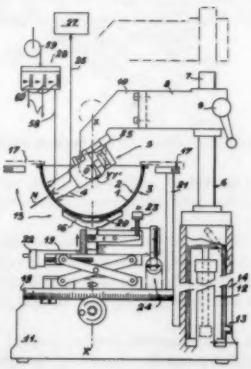
a second phosphor layer of alkali halide phosphor material vapor-deposited on said first phosphor layer and including individual columnar crystals grown substantially vertically with respect to said smooth surface of said substrate, said columnar crystals standing close together with fine spaces therebetween, said second phosphor layer having a thickness ten or more times that of said first phosphor layer.

4,437,012

DEVICE FOR BRINGING ABOUT COINCIDENCE BETWEEN THE AXIS OF A MEASURING PROBE AND A NORMAL TO THE SURFACE OF A PART TO BE CONTROLLED

Claude Cavy, Versailles, and Marie L. Rolland, Bourg la Reine, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 9, 1981, Ser. No. 328,920
Claims priority, application France, Dec. 24, 1980, 80 27514
Int. Cl.³ G12B 5/00, 9/08; G01D 11/00; G01N 23/203
U.S. Cl. 250—491.1 7 Claims



1. Apparatus comprising a probe for measuring local thickness of a surface layer that defines a surface of revolution on a

part, said probe having a probe axis that must be normal to said surface at each location where a thickness measurement is made and having a front end that must be adjacent to said surface, said apparatus comprising:

A. supporting means for holding said part with the axis of revolution of its said surface coinciding with a reference axis;

B. a first carrier member connected with said supporting means and adjustably shiftable relative thereto in opposite directions parallel to said reference axis;

C. a second carrier member connected with said first carrier member for bodily movement therewith in said opposite directions and for rotation relative thereto about a rotation axis transverse to said reference axis;

D. a third carrier member connected with said second carrier member for bodily movement therewith and for limited swinging relative thereto about an oscillation axis substantially transverse to said reference axis and said rotation axis;

E. a connection between said probe and said third carrier member whereby

(1) the probe is disposed with its probe axis substantially intersecting and normal to said rotation axis and said oscillation axis and its front end remote from those axes,

(2) the probe is constrained to move bodily with said third carrier member, and

(3) the probe is adjustably shiftable relative to said third carrier member in directions along said probe axis; and

F. sensing means on the front end portion of the probe, at a plurality of locations spaced from the probe axis, for indicating coincidence between the probe axis and a normal to a local area of surface forwardly adjacent to the probe.

4,437,013

NEUTRON AND GAMMA RADIATION SHIELDING MATERIAL, STRUCTURE, AND PROCESS OF MAKING STRUCTURE

Hugh L. Hondorp, Princeton Junction, N.J., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jul. 6, 1981, Ser. No. 280,576
Int. Cl.³ G21C *11/00*; G21F *3/02*
U.S. Cl. 250—515.1 **13 Claims**

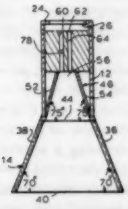
1. A material for use as a neutron and gamma radiation shield consisting of about 95 to 97 percent by weight SiO_2 and about 5 to 3 percent by weight sodium silicate.

4,437,014

SMOKE DETECTION AND DISCONNECTION APPARATUS

Lawrence J. Jones, 60 Church St., R.D. #4, Box 3, Milford, N.J. 08848

Filed Jun. 15, 1981, Ser. No. 273,584
Int. Cl.³ G01N *15/06*
U.S. Cl. 250—574 **20 Claims**



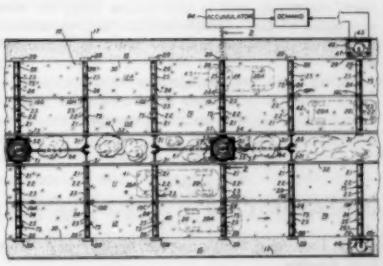
1. Smoke detection and disconnection apparatus comprising a housing having an inlet aperture and an outlet aperture for the passage of smoke and a detection chamber member having a plurality of apertures located between the inlet aperture and the outlet aperture of said housing and in fluid communication therewith, radiation emitting means located in position to transmit a beam of radiation through at least a portion of the detection chamber member in said housing, radiation detection means located in position to detect the beam of radiation transmitted through at least a portion of the detection chamber member in said housing, said radiation emitting means being located to transmit a beam of radiation through only one of the apertures of said detection chamber member to cause said aperture to be a smoke detection chamber, smoke detection means connected to said radiation emitting means and said radiation detection means for causing the operation of said radiation emitting means and for determining when the intensity of the radiation beam detected by said radiation detection means is reduced due to the presence of smoke in the smoke detection chamber in said chamber member, smoke concentrating means for concentrating smoke located between the inlet of said housing and said detection chamber member, said smoke concentrating means having an inlet aperture and an outlet located adjacent to said detection chamber member with the cross sectional area of the inlet aperture being greater than the cross sectional area of the outlet, and disconnecting means connected to said smoke detection means and adapted to be connected to monitored electrical apparatus for turning off the electricity to said monitored electrical apparatus when said smoke detection means determines that the intensity of the radiation beam detected by said radiation detection means is reduced due to the presence of smoke in the smoke detection chamber in said detection chamber member.

4,437,015

METHOD AND APPARATUS FOR AUTOMOBILE ACTUATED POWER GENERATION

Jack Rosenblum, 923 West "I" St., Ontario, Calif. 91762

Continuation of Ser. No. 111,473, Jan. 11, 1980, abandoned. This application Mar. 26, 1982, Ser. No. 362,371
Int. Cl.³ F04B *35/00*
U.S. Cl. 290—1 R **1 Claim**



1. Power transfer apparatus for generating power from passing wheeled vehicles on a roadway including at least two separate lanes for vehicles traveling in opposite directions, comprising a plurality of pairs of oppositely disposed parallel roller shafts transverse of each separate lane of said roadway, spaced rollers secured to each oppositely disposed parallel shaft to rotate therewith and adapted to be engaged by and rotated by vehicle wheels of said vehicles in contact therewith on each lane of said roadway, each of said pairs of oppositely disposed parallel shafts being spaced from each other pair of oppositely disposed parallel shafts so that wheels on both ends of said vehicle do not contact rollers on adjacent spaced pairs of shafts at the same time, a bevel gear fixed to oppositely disposed ends of each pair of said roller shafts and rotatable therewith, a spider gear located between said at least two lanes of roadway and positioned to be engaged and driven by bevel gears on one pair of said roller shafts, adjacent pairs of roller shafts positioned on opposite sides of said one pair of said roller

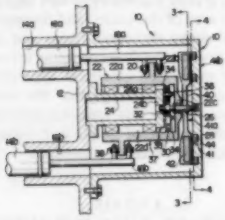
shafts and equally spaced therefrom, a jack shaft having a bevel gear on each end thereof, said jack shaft engaging said bevel gears of each pair of roller shafts on opposite sides of said one pair of roller shaft and said spider gear thereby driving said spider gear, a translator means, said spider gear being connected to said translator means via a translator shaft, a power accumulator means operatively linked to said translator means, and further means linking said accumulator means to a power demand.

4,437,016

POWER ABSORBING DEVICE FOR LOW-TEMPERATURE REFRIGERATING MACHINE

Shunichi Nakaya, Kawasaki, and Katsumasa Araoka, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 2, 1982, Ser. No. 345,017
Claims priority, application Japan, Feb. 27, 1981, 56-28223
Int. Cl.³ H02K *51/00*
U.S. Cl. 290—1 R **4 Claims**



1. A power absorbing device for absorbing the mechanical energy of reciprocating motion of pistons of a reciprocating adiabatic expansion engine, comprising:

a cylindrical cam for converting the reciprocating motion of said pistons into rotatory motion, said cylindrical cam having a hollow space therein;

a speed-increasing gear in said hollow space for increasing the speed of said rotatory motion, said speed-increasing gear having an output shaft to rotate at an increased speed; and

an electric generator including a rotor mounted on said output shaft to rotate and an electric generating section operating jointly with said rotor to supply an external load with electric power.

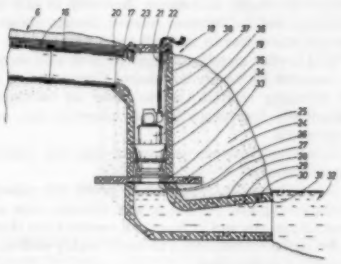
4,437,017

ARRANGEMENT FOR HYDROELECTRIC POWER PLANTS

Thomas V. Österberg, Växjö, Sweden, assignor to A-Betong AB, Växjö, Sweden

Filed Feb. 10, 1982, Ser. No. 347,491
Claims priority, application Sweden, Feb. 11, 1981, 8100934
Int. Cl.³ F03B *13/08*; E02B *9/00*
U.S. Cl. 290—52 **2 Claims**

1. Arrangement for hydroelectric power plant which comprises a flow tube through which water flows during operation, at least one inlet tube for water which leads to the flow tube, at least one discharge tube for the water which leads from the flow tube, at least one turbine runner arranged in the flow tube which is driven by the water which flows through the flow tube, a drive shaft connected with the turbine runner and an electric generator connected with the drive shaft so that when the water flows through the flow tube and causes the turbine runner to rotate, the latter via the drive shaft drives the generator which thus generates electricity, in which the arrangement exhibits accentuated sub-divisioning between the mechanical unit and portions of an installation nature, so that the turbine runner and generator are located directly adjacent to each other and together with the drive shaft form a unit so arranged that the turbine runner can be in contact with a surrounding flow of water whilst the generator has a watertight enclosure into which the drive shaft extends from the turbine in a waterproof bushing and to which at least one electric cable for transmitting the electricity produced is connected by means of a watertight connection, and so that the inlet tube, the flow tube and the discharge tube are made from prefabricated concrete components, whereby the mechanical unit, as a separate unit, is located in the flow tube in which the



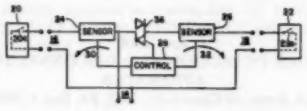
electric cables run, and whereby the flow tube is essentially vertical and provides a support for the unit, and at its upper end has an aperture through which the unit can be passed so that the unit can be assembled in the flow tube by being passed through the said aperture and lowered down onto the support, with the mechanical unit—even in the assembled state—comprising a unit which is separate from the installation portion and which can be dismantled by being hoisted upwards from the support through the said aperture.

4,437,018

AUDIO COMPONENT COUPLER

Stephen C. Manley, 8 Bartlett St., Charlestown, Mass. 02129

Filed Dec. 6, 1982, Ser. No. 446,984
Int. Cl.³ H02J *1/00*
U.S. Cl. 307—38 **5 Claims**

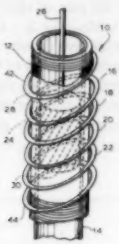


1. An audio component coupler for externally integrating separate audio-visual components for coupled operation, comprising a housing having at least a main electrical power connector for receiving power from a power source, and first and second component electrical power connectors for supplying operating power to components separately connectable externally thereto; means defining a first power transfer path interconnecting said main electrical power connector and said first component power connector, said first path including sensing means providing an indication of the transfer of power along said path; and means defining a second power transfer path interconnecting said main electrical power connector and said second component power connector, said second path including power interruption means having switching means settable by the user to either of two independently selectable states in which the flow of power in the second path is responsive to the flow of power in said first path when set to said first state and is independent of the flow of power in the first path when set to said second state.

4,437,019
LINEAR DIFFERENTIAL TRANSFORMER WITH CONSTANT AMPLITUDE AND VARIABLE PHASE OUTPUT

Jacob Chass, Rego Park, N.Y., assignor to Pickering & Company, Inc., Plainview, N.Y.

Filed Feb. 7, 1983, Ser. No. 464,754
Int. Cl.³ H02J *3/00*; H01F *71/06*
U.S. Cl. 307—83 **12 Claims**

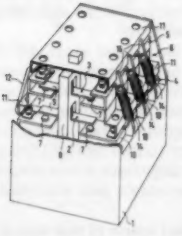


1. A differential transformer comprising:
an electrical coil extending longitudinally along an axis providing a transformer secondary winding;
first and second transformer primary windings defined by electrical coils lying generally in spaced parallel first and second planes which cut said axis at an angle other than 90°, each of said primary winding extending about said secondary winding; and,
a core of magnetic material disposed for linear movement parallel to said axis and equal in length to at least the minimal axial distance between said primary windings whereby when said primary windings are excited by AC voltages 90° out of phase with each other the phase of the secondary winding output voltage will vary with the linear displacement of said core between said primary windings and the amplitude of said output voltage will remain constant.

4,437,020
ELECTROMAGNETIC SWITCHGEAR

Gerhard Schröther, Amberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 29, 1982, Ser. No. 343,967
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1981, 3105117
Int. Cl.³ H01H *33/14*
U.S. Cl. 307—135 **5 Claims**

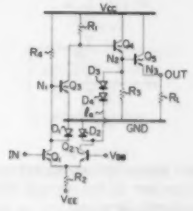


1. An electromagnetic switchgear, useful for making and breaking at least one connection from a network to a capacitive load via a damping resistor, comprising:
a set of switches for each connection being switched, each set comprising a main switch and a leading switch disposed one above the other in stories in the switchgear and operable together, each switch comprising an input contact adapted to be connected to the network, an output contact adapted to be connected to the capacitive load, and a movable bridge contact;
a jumper electrically coupling the input contacts of each set, the jumper extending from one story to the other; and
a resistor coupling the output contacts of each set, the resistor extending from one story to the other.

4,437,021
LINE DRIVER CIRCUIT

Hideji Sumi, Yokohama, and Masayuki Kokado, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 7, 1981, Ser. No. 309,438
Int. Cl.³ H03K *3/33, 3/01*
U.S. Cl. 307—270 **9 Claims**



1. A line driver circuit comprising:
a differential pair of transistors having a first transistor for receiving an input signal and a second transistor for receiving a reference signal, said first and second transistors being exclusively turned on and off in response to the electric potential of the input signal;
an output stage having an emitter follower including a plurality of transistors in which an output-stage transistor provides an output signal of a high potential or a low potential in response to the output potential of the differential pair; and
a discharge path means for drawing charges accumulated on the base of the output-stage transistor in the emitter follower, through one of the transistors in the differential pair, when the output-stage transistor in the emitter follower is turned from ON to OFF,
wherein said discharge path means comprises current switch means, having at least one diode between the base of said output-stage transistor and the collector of said one of the transistors in said differential pair, for cutting off said discharge path means when the voltage between the base and the emitter of said output-stage transistor is equal to or lower than the threshold voltage for turning on said output-stage transistor.

4,437,022
MONOLITHICALLY INTEGRATED PUSH-PULL DRIVER

Eddehard F. Miersch, Boeblingen; Kurt Pollmann, Altdorf; Helmut Schettler, Dettenhausen, and Rainer Zuhlke, Leonberg, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1981, Ser. No. 336,203
Claims priority, application European Pat. Off., Jan. 30, 1981, 81100662.6
Int. Cl.³ A03K *3/26, 5/00*
U.S. Cl. 307—270 **6 Claims**

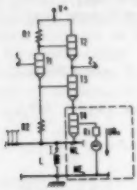
1. Integrated push-pull driver circuit having a reduced noise voltage including an output stage connected between a first and second chip voltage supply line and a third voltage supply line provided on an integration package level higher than the level of the chip comprising the driver circuit, said third volt-

age supply line carrying substantially the same potential as said second chip voltage line, said output stage comprising:

a first transistor the collector-emitter path being connected between said first voltage supply line and an output terminal;

a second transistor the collector-emitter path being connected in series with the collector-emitter path of the first transistor with the collector of the second transistor being connected to the output terminal;

means for forming from an input signal corresponding true and inverted signals and applying them to the bases of said first and second transistors, respectively;



a third transistor the collector-emitter path being connected between the emitter of the second transistor and the second voltage supply line; and

means connected between the base of the third transistor and said third voltage supply line establishing a reference potential at said base and reducing the rate of current change through the second transistor when said second transistor is turned on;

whereby a reduced noise voltage is generated on the second chip voltage supply line.

4,437,023

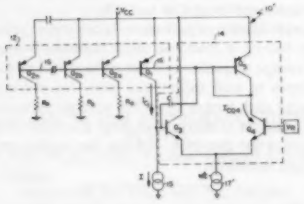
CURRENT MIRROR SOURCE CIRCUITRY

Harry A. Gill, Jr., Cupertino, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 28, 1981, Ser. No. 335,309

Int. Cl.³ H03K *3/01;* **G05F** *3/20*

U.S. Cl. 307—296 R **1 Claim**



1. A current source circuit comprising:

(a) a pair of current sources;

(b) a current mirror circuit comprising a plurality of transistors having a common base electrode, such plurality of transistors including a master transistor and at least one slave transistor, emitter electrodes thereof being electrically connected to a voltage source;

(c) differential amplifier means comprising a pair of transistors having emitter electrodes connected to a first one of the pair of current sources, a first one of the pair of transistors having a base electrode coupled to a collector electrode of the master transistor and to a second one of the pair of current sources and a collector electrode coupled to the voltage source, and a second one of the pair of transistors having a collector electrode connected to the common base electrode, for producing a current flow through the collector electrode of at least one slave transistor substantially proportional to the current flow through the collector electrode of the master transistor;

(d) wherein the differential amplifier means includes a diode connected transistor coupled between the collector electrode of the second one of the pair of transistors of the differential amplifier means and the voltage source and wherein the first one of the pair of current sources produces a mirror current MI where I is the current produced by the first one of the pair of current sources and M is at least equal to $(n(1+hfe_{min})+X+1)/hfe_{min}$ where n is the ratio of the emitter current density of the diode connected transistor to the current density of the master transistor, X is the ratio of the total collector current of the slave transistor to the collector current of the master transistor and hfe_{min} is the minimum current gain of the plurality of transistors of the current mirror circuit.

4,437,024

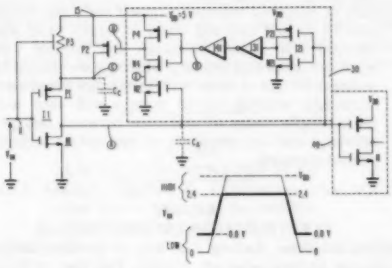
ACTIVELY CONTROLLED INPUT BUFFER

Ihor T. Wacyk, Bridgewater, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 22, 1981, Ser. No. 313,660

Int. Cl.³ H03K *19/094, 19/017, 17/26, 17/284*

U.S. Cl. 307—475 **6 Claims**



1. The combination comprising:

first and second IGFETs of complementary conductivity type, each IGFET having source and drain electrodes defining the ends of a conduction path and a control electrode;

a signal input terminal, a signal output terminal, and first and second power terminals for the application therebetween of an operating potential;

means connecting the control electrodes of said first and second IGFETs to said signal input terminal;

means connecting the drain electrodes of said first and second IGFETs to said signal output terminal;

a controllable impedance means connected between said source of said first IGFET and said first power terminal, said controllable impedance means normally providing a relatively high impedance path when said first IGFET is turned on;

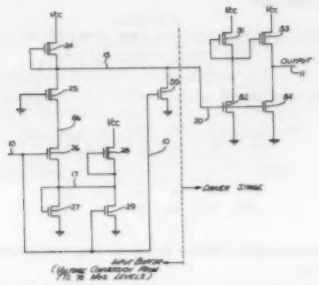
means connecting said source of said second IGFET to said second power terminal; and

pulse generating means coupled between said signal output terminal and said controllable impedance means for momentarily placing said controllable impedance means in a relatively low impedance condition in response to said first IGFET being driven from an OFF to an ON condition.

4,437,025
MOS BUFFER FOR RECEIVING TTL LEVEL SIGNALS

Wei-Ti Liu, San Jose, and Douglas J. Lee, Santa Clara, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jul. 29, 1981, Ser. No. 287,889
Int. Cl.³ H03K *19/094*
U.S. Cl. 307—475 9 Claims



1. An integrated circuit for converting a first binary signal operating between first levels, to a second binary signal operating between second levels, comprising:

a first inverter coupled to receive said first binary signal as an input signal;

a reference voltage means for providing a reference voltage for said first inverter, said reference means coupled to said first inverter;

a second inverter for providing current to said reference means when said first binary signal is at one of said first levels, and for providing a current path for said first inverter when said first binary signal is at said other of said first levels, said second inverter coupled to said reference means and coupled to receive said first binary signal; and,

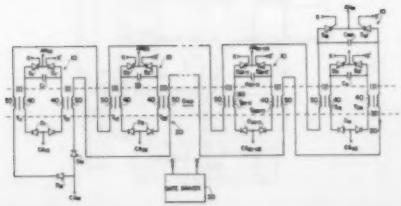
level shifting means coupled to the output of said first inverter, for shifting the output signal from said first inverter when said first binary signal is at the other of said first level, said level shifting means coupled to receive said first binary signal;

whereby said output signal from said first inverter with said level shifting, provides said second binary signal.

4,437,026
APPARATUS FOR ELECTRODE CURRENT CONTROL IN LINEAR MHD GENERATORS

Ara M. Demirjian, Arlington, Mass., and Albert Solbes, Rancho Palos Verdes, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 17, 1980, Ser. No. 217,355
Int. Cl.³ H02K *45/00*
U.S. Cl. 310—11 13 Claims



1. Apparatus for controlling electrode current distribution in dc circuits of the type having a plurality of pairs of opposed electrodes along a channel wherein each electrode pair produces a corresponding dc electrode current at a pre-set location across said channel, and the plurality of pairs produces a load current, said control apparatus comprising:

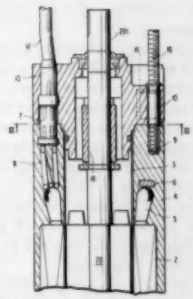
means for converting each electrode current into first and second periodic control signals which are 180° out of phase with respect to each other and which have equal magnitudes corresponding to the magnitude of the associated electrode current at preset locations across the channel; and

means for magnetically coupling individual ones of said first control signals and for magnetically coupling individual ones of said second control signals such that the corresponding electrode currents are equalized or rendered proportional in the same or constant ratios in accordance with the locations of the electrode currents.

4,437,027
MOLDED SUBMERSIBLE MOTOR

Sakuei Yamamoto, and Mitsuhiro Nishida, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 8, 1982, Ser. No. 337,911
Claims priority, application Japan, Jan. 17, 1981, 56-6628
Int. Cl.³ H02K *7/10*
U.S. Cl. 310—78 2 Claims



1. A molded submersible motor, comprising:

(a) an open ended, hollow cylindrical frame (4) formed of resinous molding material,

(b) a stator assembly including a stator core (2) and a stator coil (15) embedded in said frame,

(c) a rotor assembly (20) rotatably mounted inside of the stator assembly,

(d) a pair of end brackets (10, 11) formed of resinous molding material and individually detachably secured to opposite ends of said frame to close the openings thereof,

(e) a voltage surge absorber unit molded into said frame,

(f) a starting switch unit of said motor molded into one of said end brackets positioned at an end of the motor adapted to be coupled to an apparatus driven by said motor,

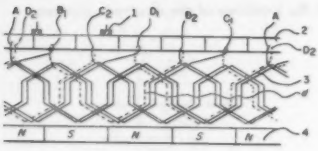
(g) a lower connector (7) molded into said frame and coupled to said stator coil (15) and said voltage surge absorber unit via lead wires (8) embedded in said frame, and

(h) an upper connector (13) molded into said one of said end brackets for coupling a power source cable (12) to said lower connector and said starting switch unit.

4,437,028
ARMATURE WINDING FOR A DC MULTI-POLE MOTOR

Kenske Ikeda, Room No. 3, Midori-so, 10-3, Chuorinkan 6-chome, Yamato-shi, Kanagawa-ken, Japan

Continuation of Ser. No. 32,482, Apr. 23, 1979, abandoned. This application May 19, 1981, Ser. No. 265,197
Claims priority, application Japan, Apr. 25, 1978, 53-49133
Int. Cl.³ H02K 3/00
U.S. Cl. 310—198 6 Claims



1. A DC multi-pole electrodynamic device, comprising:

an annular array of fixed field magnets forming fixed magnetic field poles of alternating magnetic polarity around the array, respectively;

magnetic material for closing magnetic circuits of said field magnets;

an armature operatively disposed adjacent to said field magnets and mounted for rotation about an axis, said armature having a commutator composed of an annular array of commutator segments and a winding composed of a plurality of armature coils;

a set of two brushes in electrical contact with respective commutator segments of said commutator to respectively provide electrical current of different electrical potential;

a first one of said coils being formed by a single conductor having a first tap at one of its ends and a second tap at the other of its ends, each tap being electrically connected to respective first and second commutator segments, said first coil comprising a plurality of complete conductor turns around said armature with each turn having successive active armature portions of alternating magnetic polarity when energized adjacent to said successive ones of said magnetic field poles;

a second one of said coils being formed by a single conductor having a third tap at one of its ends and a fourth tap at the other of its ends, each tap being electrically connected to respective third and fourth commutator segments, said second coil comprising a plurality of complete conductor turns around said armature with each turn having successive active armature portions of alternating magnetic polarity when energized adjacent to said successive ones of said magnetic field poles;

said first one of said coils being in magnetic phase with said second one of said coils;

said armature further including a conductive winding for connecting said second tap directly to said third tap so that their respective commutator segments will be at substantially the same potential when one is energized;

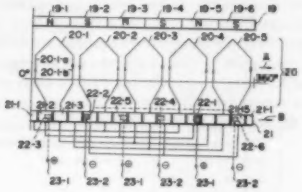
all of said coils substantially identical, displaced about said axis with respect to their adjacent coils and separated pairs of said coils being in magnetic phase, said separated pairs being connected by a conductive winding in a like manner of said first and second coils; and

the number of said taps being equal to one-half PZ, wherein P represents the number of said magnetic field poles and Z is the number of said armature coils.

4,437,029
DIRECT CURRENT MOTOR

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo; Manabu Shiraki, 4451-171 Shimotsuruma, Yamato-shi, Kanagawa-ken, and Kazuhito Egami, 2-44-1 Chuo, Nakano-ku, Tokyo, all of Japan

Filed Oct. 16, 1981, Ser. No. 312,089
Int. Cl.³ H02K 23/26
U.S. Cl. 310—198 4 Claims



1. A direct current motor for imparting continuous rotation comprising:

a field magnet having a circular array of 2mn magnetic poles magnetized with the same magnetic intervals as those of magnetic poles N and S, where m is an integer of 1 or more and n is an integer of 3 or more;

an armature with a circular array of m(2n±1) armature coils arranged with equal pitch;

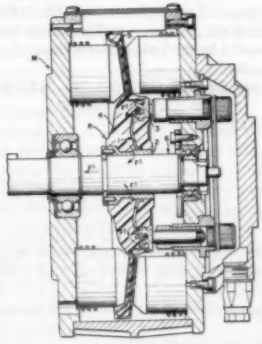
means for mounting said field magnet and armature for relative rotation in coaxial juxtaposition; and

electric power supply control means including means for supplying armature drive current to said armature coils and means for switching said armature current 2mn (2n±1) times per revolution of the armature with respect to the field magnet.

4,437,030
ROTOR WITH A COOLING DEVICE, MORE PARTICULARLY OF THE COMMUTATOR, FOR ELECTRIC MOTORS, AND THE METHOD AND MEANS FOR MAKING THIS DEVICE

Michel Coquillart, Saint.Etienne Terrenoire, France, assignor to Mavilor Systemes, Switzerland

Filed May 6, 1981, Ser. No. 260,996
Claims priority, application France, May 9, 1980, 80 11149
Int. Cl.³ H02K 9/28
U.S. Cl. 310—227 7 Claims



1. Rotor with commutator-cooling device for electric motors of the type comprising a molded unit having an inner bushing (2) on the driving shaft (6), a current commutator (3) and a winding (5) connected to the commutator (3), wherein cooling is effected by a thermal bridge established between

said inner bushing (2) and said commutator (3) by at least one thermal conductor (1-C1-C2) embedded in the rotor, one part of which is positioned immediately adjacent to said commutator (3) but without contacting it, and the other part of which is in intimate contact with said inner bushing (2) in order to create a transfer of heat from said commutator to said inner bushing.

4,437,031

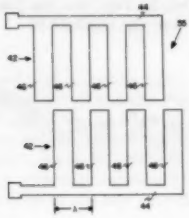
ZNO SAW DEVICE HAVING SEPARATE COMB TRANSDUCER

Robert L. Gunshor; Robert F. Pierret, both of West Lafayette, Ind., and Michael R. Melloch, Mesquite, Tex., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Sep. 30, 1982, Ser. No. 431,683

Int. Cl.³ H01L *41/04*

U.S. Cl. 310—313 B **9 Claims**



1. A separate comb transducer for use in a device having a surface acoustic wave coupled thereto, said transducer comprising first and second conductive elements each of which includes an arm and a plurality of fingers extending from said arm, said fingers being substantially parallel to and spaced from one another with the width of said fingers and the spacing therebetween each being substantially equal to one-half of the wavelength of said surface acoustic wave, and said elements being positioned with the fingers of each element substantially parallel to the fingers of the other element with the free ends of the fingers of each element adjacent to but not overlapping the fingers of the other element, and with said fingers of each said element being substantially aligned with the spaces adjacent to said fingers of the other element.

4,437,032

SENSOR FOR DISTANCE MEASUREMENT BY ULTRASOUND

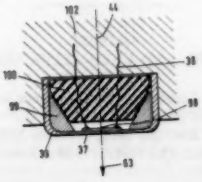
Egon Gelhard, Thomas-Mann-Str, 10, D-5000 Köln 51, Fed. Rep. of Germany

Filed Sep. 22, 1982, Ser. No. 421,484

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1981, 3137745

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—324 **6 Claims**



1. In a sensor for measuring distance by transmitting ultrasound signals beamed onto objects, and receiving signals reflected from said objects, including an ultrasound transmitter member for transmitting said signals, and an ultrasound receiver member for receiving the reflected signals, at least one of said members including a converter formed with a cavity and having piezo-ceramic resonator means disposed therein for converting the ultrasound signals to electrical signals, or the electrical signals to the ultrasound signals, said converter including a substantially circular membrane having an inner side, the improvement comprising, in combination,

damping means disposed on opposite circular segments of the inner side of said substantially circular membrane for preventing the transmission or reception of ultrasound signals having excessive strength.

4,437,033

ULTRASONIC TRANSDUCER MATRIX HAVING FILLER MATERIAL WITH DIFFERENT ACOUSTICAL IMPEDANCE

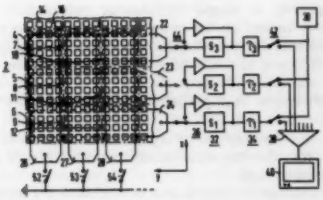
Heinrich Diepers, Höchstadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 27, 1981, Ser. No. 267,583

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 302144

Int. Cl.³ H01R *17/06*

U.S. Cl. 310—334 **3 Claims**



1. An ultrasonic transducer arrangement having a matrix of ultrasonic oscillators, the arrangement further comprising:

a plurality of ultrasonic oscillators, each ultrasonic oscillator consisting of a matrix of columnar transducer elements which are electrically controlled simultaneously, each transducer element having a uniform thickness throughout its height, the height of each such element being substantially greater than the thickness thereof;

filler material interposed between individual ones of the transducer oscillators, and between individual ones of the transducer elements, said filler material being limited in extent to the height of the transducer elements and having an acoustic impedance which is substantially different from the acoustic impedance of the oscillator material of the transducer elements, and for providing a structurally locking connection between adjacent ones of the transducer elements throughout their height;

a plurality of electrode conductor strips disposed on either side of said matrix of columnar transducer elements, said electrode conductor strips being arranged parallel to one another so as to form rows of electrode conductor strips on one side of said matrix, and parallel to one another on the other side of said matrix in a direction transverse to said rows of electrode conductor strips to form columns of electrode conductor strips on said other side of said matrix; and

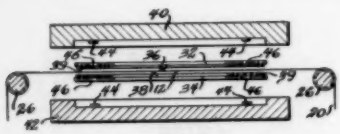
a plurality of electronic delay stages associated with respective ones of said rows of electrode conductor strips, said columns of electrode conductor strips and said rows of electrode conductor strips being separately controllable.

4,437,034

PARALLEL-WIRE GRID ASSEMBLY WITH METHOD AND APPARATUS FOR CONSTRUCTION THEREOF

Edward F. Lewandowski, Westmont, and John Vrabec, South Holland, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 26, 1981, Ser. No. 314,920
Int. Cl.³ H01J 1/46, 17/04, 19/38, 21/10
U.S. Cl. 313—348 1 Claim



1. A winding assembly for use in constructing a plurality of parallel-wire grids wherein arrays of substantially coplanar spaced-apart parallel wires are retained between overlying first and second mating frame members by an electrically conductive adhesive, the arrays being formed by continuously winding a wire along a predetermined path, the winding assembly comprising;

a plurality of spaced-apart spindles each having opposing ends, at least one outer surface for contacting said wire, and a plurality of predeterminedly spaced index means on said one surface for receiving said wire, said index means comprising a single continuous substantially helical groove formed on the outer surfaces of said spindles;

first and second spaced-apart walls, said opposing ends of said first and said second spindles joined to said first and said second walls respectively, so as to be suspended therebetween in a predetermined spaced-apart relationship;

means for rotatably mounting said first wall to rotate said assembly, thereby winding said wire about said plurality of spindles; and

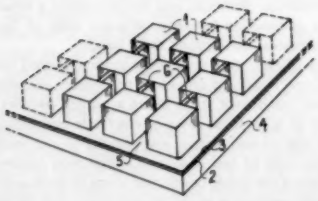
aperture means located in said second wall for introduction of one of said first and said second mating frame members to interior portions of said wire array which are enclosed by the continuous winding of said wire about said plurality of said spindles.

4,437,035

PYROELECTRIC TARGET AND IMAGE PICK UP TUBE PROVIDED WITH SUCH A TARGET

Claude Y. Raverdy, and Serge Veron, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Oct. 14, 1981, Ser. No. 311,247
Claims priority, application France, Oct. 14, 1980, 80 21943
Int. Cl.³ H01J 31/00, 31/26
U.S. Cl. 313—388 5 Claims



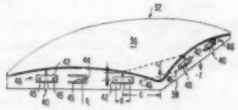
1. A pyroelectric target for an image pick up tube, made from a layer of a material endowed with the property of pyroelectricity, which presents a spontaneous electric polarization which depends on its temperature, said layer divided into a mosaic of spaced pyroelectric elements bonded at its base to a support covered with an electrode from which is taken, during reading of the target, the electric signal corresponding to each element and depending on the incident, more especially infrared, radiation received by the element, said layer further comprising pyroelectric junction arms between said pyroelectric elements, connecting together at least some thereof, said pyroelectric junction arms extending over a certain height from said base and presenting dimensions, particularly a section parallel to said base, which are small with respect to those of the pyroelectric elements themselves.

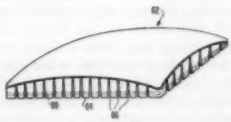
4,437,036

CATHODE-RAY TUBE HAVING A TEMPERATURE COMPENSATED MASK-FRAME ASSEMBLY

Frank R. Ragland, Jr., Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 23, 1981, Ser. No. 314,383
Int. Cl.³ H01J 29/80
U.S. Cl. 313—402 14 Claims





1. In a cathode-ray tube having a mask-frame assembly mounted therein in spaced relation to a screen, said mask-frame assembly including a shadow mask attached to a peripheral frame, the improvement comprising

said mask-frame assembly including a plurality of peripheral flexible portions at least one of which is bridged by a member having a different coefficient of thermal expansion than said assembly, said bridging member being attached to said assembly at opposite sides of the at least one bridged flexible portion, whereby said at least one flexible portion is caused to flex by the expansion of said bridging member when said bridging portion becomes heated during tube operation.

4,437,037

DISPLAY PANEL AND KEEP-ALIVE ARRANGEMENT THEREFOR

Edgar L. Harvey, Jamesburg, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 30, 1981, Ser. No. 335,755
Int. Cl.³ H01J 17/49, 17/46
U.S. Cl. 313—585 2 Claims

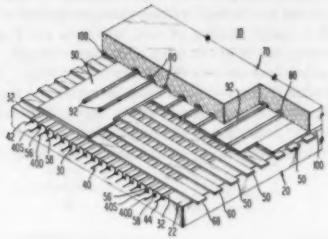
1. A display panel comprising p1 a gas-filled envelope made up of a base plate and a face plate sealed together hermetically,

an array of rows and columns of gas-filled cells,

a plurality of first electrodes disposed parallel to each other and seated in elongated first slots in the top surface of said base plate,

a plurality of second electrodes seated in other slots in the top surface of said base plate, and

a plurality of identical strip electrodes disposed between said base plate and face plate and oriented at an angle to said first electrodes to define gas cells therewith, one of said strip electrodes being operable as an anode with respect to said second electrodes operable as glow cathodes, and the



others of said strip electrodes being operable as glow cathodes with respect to said first electrodes,

said strip electrodes being disposed in an array along said base plate, and said one of said strip electrodes is the first strip electrode in the array, said other slots being shorter than said first slots and extending from the edge of the base plate only up to said first strip electrode.

4,437,038

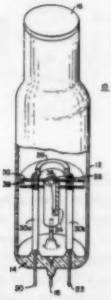
HOLLOW CATHODE LAMP WITH IMPROVED STABILITY ALLOY FOR THE CATHODE

Vincent F. Link, Elmira, and George K. Yamasaki, Horseheads, both of N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 29, 1979, Ser. No. 43,529

Int. Cl.³ H01J *17/04*

U.S. Cl. 313—633 **3 Claims**



1. A spectral radiation source of the hollow cathode type comprising an anode and cathode positioned within a gas filled envelope, with the operating discharge between the anode and the cathode generating spectral radiation which is characteristic of the metal cathode, the improvement wherein the metal cathode,

consists of an alloy of silver which is chemically stable and readily sputtered, and

calcium in an amount of up to about 25 weight percent of the alloy.

4,437,039

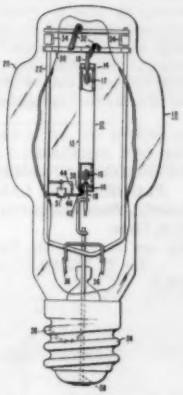
STARTING ARRANGEMENT FOR HIGH-INTENSITY-DISCHARGE SODIUM LAMP

Daniel A. Larson, Cedar Grove, N.J., assignor to North American Philips Electric Corp., New York, N.Y.

Continuation-in-part of Ser. No. 948,131, Oct. 3, 1978, Pat. No. 4,191,910. This application Oct. 25, 1979, Ser. No. 88,424

Int. Cl.³ H01J *7/44, 17/34, 19/78, 29/96;* **H01K** *1/62*

U.S. Cl. 315—60 **15 Claims**



1. In combination with a high-intensity-discharge sodium lamp comprising an arc tube formed as an elongated hollow alumina body member of predetermined dimensions having alumina end-closure members hermetically sealed to the end portions of the hollow body member and enclosing a discharge-sustaining filling comprising sodium and inert ionizable starting gas, electrodes operatively positioned within said arc tube proximate the ends thereof, electrical lead-in means sealed to and extending through said alumina end-closure members and connecting to said electrodes to form composite electrode-lead-in structures, a light-transmitting protective outer envelope surrounding said arc tube, frame means positioned within said outer envelope for supporting said arc tube in predetermined position within said outer envelope, electrical adaptor means affixed to said outer envelope for connection to a source of power, a pair of electrical connection means connecting said electrical adaptor means to said electrical lead-in means, and one of said electrical connection means including said frame means to electrically connect one of said electrodes to said electrical adaptor means, the improvement which comprises:

(a) electrically conducting ceramic means hermetically sealed to and extending through said arc tube at least at one end thereof to form electrically conducting path means through said arc tube, a portion of said conducting ceramic means positioned interiorly of said arc tube and electrically insulated from the proximate electrical lead-in means, said conducting ceramic means comprising refractory-oxide-based ceramic matrix which is non-reactive with respect to high-temperature sodium vapor and which possesses the predetermined thermal-physical-chemical properties required to form a high-temperature seal, with alumina, and said refractory-oxide-based conducting ceramic means having embedded therein a predetermined amount of finely divided refractory metal which is inert with respect to said discharge-sustaining filling to provide said conducting ceramic means with a predetermined electrical conductivity;

(b) electrically insulating barrier means positioned intermediate said arc-tube-interior portion of said conducting ceramic means and portions of said electrical lead-in conductor means which project interiorly of said arc tube and are proximate said conducting ceramic means, and said

barrier means being dimensioned to intercept any condensed discharge-sustaining filling and prevent same from forming a conducting path between said conducting ceramic means and the proximate lead-in conductor means; and

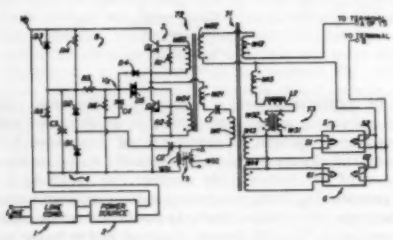
(c) during starting of said lamp said conducting ceramic means electrically connect, exteriorly of said arc tube, to the said electrode which is positioned proximate the opposite end of said arc tube from the connected conducting ceramic means, and during starting of said lamp the total electrical resistance between said arc-tube-interior portion of said conducting ceramic means and the connected opposite electrode permitting the maintenance of a glow-type discharge within said arc tube between said arc tube interior portion of said conducting ceramic means and the said composite electrode-lead-in structure which is proximate thereto to ionize the atmosphere within said arc tube.

4,437,040

METHOD OF EFFECTING STABILIZED DIMMING OF FLUORESCENT LAMPS

David L. Bay, Beverly, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Apr. 12, 1982, Ser. No. 367,307
Int. Cl.³ H05B 37/02
U.S. Cl. 315—209 R **5 Claims**



1. In an electronic ballast system including an oscillator signal source and an output transformer for driving a lamp filament, a method of effecting stabilized lamp dimming whereby a lamp filament voltage is maintained substantially constant despite variations in the power level supplied to the lamp, the method comprising the steps of:

coupling a first inductance in the resonant loop of the oscillator signal source,

substantially clamping the voltage across the first inductance,

coupling a second inductance to the first inductance so that the voltage across the second inductance is in proportion to the voltage across the first inductance, and

applying the voltage across the second inductance to the lamp filament so that a dominant component of the total voltage across the filament is attributable to the voltage across the second inductance.

4,437,041

AMALGAM HEATING SYSTEM FOR SOLENOIDAL ELECTRIC FIELD LAMPS

Victor D. Roberts, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,254
Int. Cl.³ H05B 41/16, 41/24
U.S. Cl. 315—248 **10 Claims**

1. A solenoidal electric field lamp comprising:

an evacuable, light transmissive envelope having an ionizable medium including mercury vapor, disposed therein;

means for providing a solenoidal electric field within said envelope, said means comprising a core being coupled to an external alternating current power source through a winding disposed on said core, said winding coupled to the exterior of said envelope through a pair of wire leads;

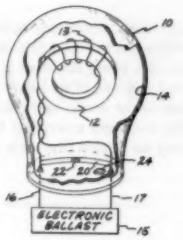
a length of conductive material disposed within said envelope; and

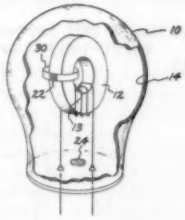
an amalgam patch situated on said conductive material, said length of conductive material electrically connected to said pair of wire leads so that automatically variable control of the heat supplied said amalgam patch is achieved during lamp operation, rapid heating of said amalgam occuring due to high starting voltages applied to said core, and reduced heating of said amalgam patch after lamp starting due to lower lamp operating voltages.

6. A solenoidal electric field lamp comprising:

an evacuable, light-transmissive envelope having an ionizable medium including mercury vapor, disposed therein;

means for providing a solenoidal electric field within said envelope, said means comprising a core being coupled to





an external alternating current source through a winding disposed on said core, said winding coupled to the exterior of said envelope through a pair of wire leads;

a length of conductive material formed in a loop linking the core, so that during lamp operation the time varying magnetic field which drives the discharge current in the lamp also causes a current to flow in said conductive loop; and

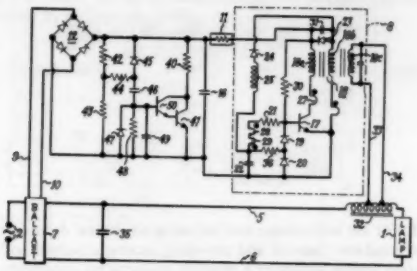
an amalgam patch situated on said conductive material, so that automatically variable control of the heat supplied said amalgam patch is achieved during lamp operation, with rapid heating of said amalgam patch disposed on said conductive loop due to the high starting voltage applied to said core by said external alternating current source and reduced heating of the amalgam patch after lamp starting due to the lower voltage provided to the core after starting because of the solenoidal electric field lamp operating characteristic.

4,437,042

STARTING AND OPERATING CIRCUIT FOR GASEOUS DISCHARGE LAMPS

Don Morais, Danville, Ill., and Daniel V. Owen, Hendersonville, N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 10, 1981, Ser. No. 329,533
Int. Cl.³ H05B 37/00, 39/00, 41/14
U.S. Cl. 315—289 15 Claims



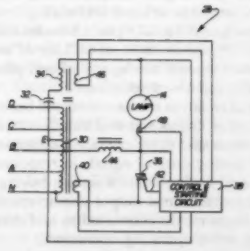
1. A starting and operating circuit for gaseous discharge lamp comprising, in combination, a source of alternating current, inductive ballast means connected at its input side to said current source, discharge lamp means connected to the output side of said ballast means, transformer means connected in series with said discharge lamp means across said ballast means, sine wave oscillator means connected at its input side through rectifying means to said current source and at its output side of said transformer means whereby said transformer means steps up and applies to said discharge lamp means sine wave voltage produced by said oscillator means for starting and restarting said discharge lamp means, said circuit being subject to overshoot of voltage from said current source to said oscillator means, and means connected to said rectifying means and said oscillator means for limiting said voltage overshoot.

4,437,043

LIGHTING CONTROL FOR HIGH INTENSITY DISCHARGE LAMP

Ira J. Pitel, Morristown, N.J., assignor to Cornell-Dubilier Electric Corporation, Newark, N.J.

Filed Nov. 22, 1982, Ser. No. 443,243
Int. Cl.³ H05B 41/392
U.S. Cl. 315—308 14 Claims



1. A control circuit for regulating light output of high intensity discharge lamps comprising:

a magnetic ballast providing electrical power for at least one high intensity lamp;

a controlled impedance coupled between said ballast and said lamp;

circuit means for controlling a period of conduction for said controlled impedance;

said circuit means including means combining signals proportional to a current through said lamp, a voltage across said lamp and an output lighting level of said lamp; and

current conduction means for providing a current path when said controlled impedance is not in a period of conduction.

4,437,044

FLAT CATHODE RAY TUBE AND METHOD OF OPERATION

Werner Veith, Heidelberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 109,810, Jan. 7, 1980, abandoned. This application May 6, 1982, Ser. No. 375,405
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1979, 2902852
Int. Cl.³ H01J 29/70, 29/72
U.S. Cl. 315—366 20 Claims

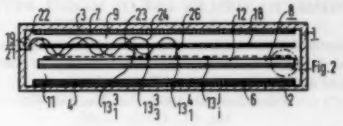


Fig. 2

1. A method for displaying optical information in a flat cathode ray tube comprising the steps of providing a flat cathode ray tube leaving an evacuated container having a front and back wall which are parallel to each other, said front wall supporting a cathodo-luminescent layer and a flatly extending acceleration anode, said back wall having a flatly extending back electrode, said container in a plane extending parallel to the front and back walls and sub-dividing the chamber into a back chamber and a front chamber being provided with a substrate having a plurality of parallel extending conductive strips forming at least one group of row conductors facing the back electrode and on a surface opposite the row conductors being provided with a plurality of parallel conductor strips extending perpendicular to the direction of the row conductors to form column conductors, said substrate being provided with apertures disposed in the row conductors, said cathode ray tube being provided with an electron source extending along one side wall of the container parallel to the row conductors, said electron source including one emission cathode as well as one attraction anode to produce a flat electron beam having a width which extends the entire length of the row conductors, extends parallel to the row conductors, and projects the beam obliquely into the back chamber, said tube including a beam guidance electrode with an equal potential extending in a plane parallel to the back wall between the row conductor and the back electrode; controlling the potentials applied on the back electrodes, the acceleration anode, the emission cathode, the attraction anode, the beam guidance electrode and the row conductors to project a flat beam from the electron source obliquely into the back chamber to travel in a sinuous path with a wavelength and with penetration of the plane of the beam guidance electrode at least once prior to penetrating a selected row conductor and to penetrate successively selected row conductors, said controlling including applying a base potential to the cathode, applying a potential more positive than the base potential to the beam guidance electrode, applying potentials more negative than the base potential to the back electrode and to at least all of the row conductors located between a selected row conductor and the cathode, and raising the potential on each selected row coneuctor to be ≧ to the base potential to move the selected row conductors along the

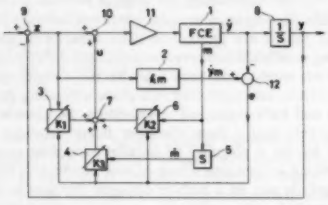
row conductive successively; changing the wavelength of the sinuous path of the flat beam in a saw tooth manner so that the flat beam strikes each row conductor of the group of conductors after travelling the same number of half wavelengths and after leaving the sinuous path at the same phase of the path, said changing of the wavelength includes modulating the potential applied to at least one of the back electrodes, beam guidance electrode, non-selected row conductors and the attraction anode in a saw tooth manner; and providing selected signal voltages to the column conductors to selectively block the passage of the electron beam through space points of the selected row conductor and enable passage at other points so that the electron beam strikes selected points of a row of points on the cathodo-luminescent layer associated with the selected row conductor.

4,437,045

METHOD AND APPARATUS FOR CONTROLLING SERVOMECHANISM BY USE OF MODEL REFERENCE SERVO-CONTROL SYSTEM

Toyokazu Mitsuoka, Niiza, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade and Industry, both of Tokyo, Japan

Filed Jan. 20, 1982, Ser. No. 340,966
Int. Cl.[3] G05B *13/00*
U.S. Cl. 318—561 **12 Claims**



1. An apparatus for model reference adaptive servo-control, which comprises in combination:

a final control element to be driven on the basis of an instruction input and to be controlled by feeding back the output of the final control element to the instruction input;

a reference model provided with the performance characteristics the same as those of the final control element;

a detector for detecting a load value and a load variation value of said final control element;

a comparator for comparing the outputs of said final control element and said reference model thereby obtaining the difference therebetween;

at least one adaptive control coefficient circuit having stored therein an adaptive control coefficient which is so prescribed that the difference between the outputs of the final control element and reference model is eliminated, and adapted to produce an adjusting parameter by multiplying one of the instruction input, load value and load variation value by said adaptive control coefficient;

at least one multiplier for multiplying at least one adaptive control coefficient by at least one of the instruction input, load value and load variation value thereby to obtain an adaptive control input; and

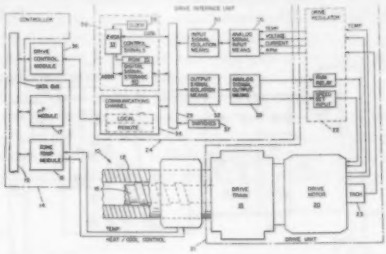
an adder for adding said adaptive control input to said instruction input and feeding these inputs to the final control element.

4,437,046

EXTRUSION DRIVE CONTROL SYSTEM

Louie M. Faillace, Pawcatuck, Conn., assignor to Crompton & Knowles Corporation, New York, N.Y.

Filed Jun. 18, 1982, Ser. No. 389,937
Int. Cl.[3] G05B *19/24*
U.S. Cl. 318—571 **5 Claims**



1. For use with a drive unit including an electric drive motor and regulator therefor and providing analog condition information signals indicating a plurality of operating conditions of the drive unit, said operating conditions including drive rpm, armature voltage and armature current, a drive interface unit adapted to accept said analog condition information signals having any of a plurality of said of predetermined input characteristics and to provide corresponding digital signals having characteristics invariant with respect to the particular said input characteristics,

said drive interface unit having

analog signal input means for receiving from said drive unit a set of said analog condition information signals, said analog signal input means having selectable means connectable to said drive unit to receive said set of analog condition information signals having any of a plurality of predetermined input characteristics,

analog signal output means for outputting to said drive unit analog control signals representative of a plurality of drive operating commands, said operating commands including on/off commands and speed set commands, said analog signal output means having selectable means connectable to said drive unit to output said analog control signals having any of a plurality of predetermined output characteristics,

internal data bus means for carrying digital information signals, said digital information signals having characteristics generally substantially different from said predetermined input and output characteristics,

input signal isolation means connected between said analog signal input means and said data bus, for providing, for each said operating condition, corresponding said digital signals in response to input said analog condition information signals, said digital signal characteristics being invariant with respect to input of said set of analog condition information signals having any of said plurality of predetermined input characteristics,

output signal isolation means connected between said analog signal output means and said data bus means, for providing, for each said drive operating command, corresponding said analog control signals in response to said digital signals, said analog control signals having a selected one of said predetermined output characteristics, and

command input means connected to said data bus means for inputting drive operating commands,

data storing and channeling means connected to said data bus means and having timing means and digital information signal storage,

said data storing and channeling means being responsive to said timing means successively to receive from said input signal isolation means said digital signals indicating said

drive operating conditions and to store said digital signals in said digital signal storage,

said data storing and channeling means being responsive to said input commands to control said analog signal output means to output said analog control signals indicating said input command.

4,437,047

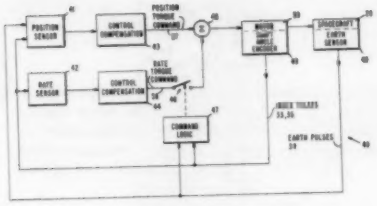
SYSTEM FOR AUTONOMOUS EARTH-POINTING ACQUISITION OF A DUAL-SPIN SATELLITE

John W. Smay, Torrance, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Jul. 13, 1981, Ser. No. 282,776

Int. Cl.³ B64C *17/06*

U.S. Cl. 318—649 **3 Claims**



1. Apparatus for providing torque command signals to a torque motor which controls the pointing direction of the despun portion of a dual-spin satellite having spun and despun portions, said despun portion having a desired pointing direction within predetermined angular limits, said apparatus comprising:

first means for sensing the relative pointing position of said despun portion and providing first signals indicative thereof;

second means for providing second signals indicative of said predetermined angular limits;

third means coupled to said first and second means for generating position torque command signals;

fourth means coupled to said first means for generating rate torque command signals;

switching and summing means coupled to said third and fourth means and to said torque motor for providing said position torque command signals to said torque motor when said relative pointing position is within said angular limits, and for providing the sum of said position and rate torque signals to said torque motor when said relative pointing position is outside said angular limits.

4,437,048

CONTROL SYSTEM FOR A PULLED LOAD, PARTICULARLY AGRICULTURAL TRACTOR-AND-PLOUGH CONTROL SYSTEM

Winfried Arnold, Vaihingen/Enz, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 18, 1982, Ser. No. 389,587

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1981, 3128713

Int. Cl.³ G05B *1/06*

U.S. Cl. 318—663 **23 Claims**

1. Control system for a pulled load from a traction drive in which the position of the load with respect to ground level is subject to a command control (7), particularly for agricultural trailed apparatus pulled by a tractor, having

a position command element (7) providing a command position signal;

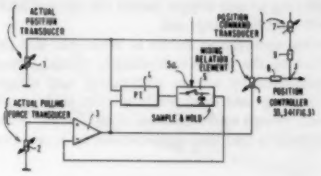
a position transducer (1) providing an actual position signal;

a force transducer (2) measuring the pulling force and providing an actual force signal;

a controlled mixer (6) connected to and controlled by the actual position signal and the actual force signal and providing a combined mixed signal;

and a control means (33, 34) coupled to the pulled load and responsive to the commanded position signal and combined signal to position the pulled load with respect to ground level;

and comprising, in accordance with the invention,



means (3, 4, 5) for normalizing one of said actual signals with respect to another one of the actual signals, said so normalized one signal and the other one of the signals being connected to the controlled mixer to eliminate reaction on the mixing ratio or mixing relationship effected by the controlled mixer upon relative change of said one actual signal with respect to the other, and hence change of the actual position of the pulled load independently of change of the setting of the positioning command element (7).

4,437,049

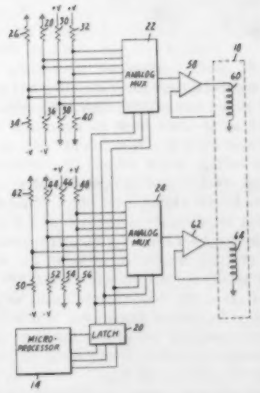
STEPPER MOTOR CONTROLLER

Robert N. Tullos, and Arthur Ostroff, both of Woodland Hills, Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 27, 1982, Ser. No. 372,384

Int. Cl.³ H02K *29/04*

U.S. Cl. 318—696 **5 Claims**



1. For a stepper motor capable of being positioned at a plurality of positions, having a plurality of steps and an associated current state for each of said plurality of positions and each of said plurality of positions being associated with one of said plurality of steps, a method of moving said stepper motor from an initial position to a final position by means of sequentially stepping said stepper motor through said plurality of steps, comprising the sequential operations of:

determining the direction of movement from said initial position to said final position;

determining the number of steps from an initial step associated with said initial position to a final step associated with said final position;

only if said direction of movement is in a first direction, then incrementing said number of steps;

applying to said stepper motor the current state associated with the next of said plurality of steps in said direction of movement;

repeating the previous operation until said number of steps have been initiated;

if said direction of movement is in said first direction, then applying to said stepper motor the current state associated with said final step; and

allowing said stepper motor to settle into said final position; whereby the magnetc hysteresis of said stepper motor is diminished by always electrically and magnetically approaching said final position from said second direction even though said direction of movement from said initial position to said final position may be in said first direction.

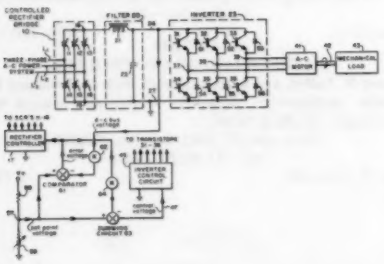
4,437,050
STABILIZING CIRCUIT FOR CONTROLLED INVERTER-MOTOR SYSTEM

John K. Overzet, Elmhurst, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 189,445, Sep. 22, 1980, abandoned. This application Nov. 30, 1982, Ser. No. 445,647

Int. Cl.³ H02P 7/42

U.S. Cl. 318—798 **5 Claims**



1. A control system for controlling and stabilizing the operation of an a-c motor driven by the output a-c voltage developed by an inverter from an adjustable d-c bus voltage received over a d-c bus from a controlled d-c power supply, the d-c bus voltage being subject to undesired variations under changing conditions, said control system comprising:

means for providing a set point voltage representing a desired steady state amplitude and a desired steady state frequency for the a-c voltage produced by the inverter;

first utilizing means for utilizing the set point voltage to adjust the d-c bus voltage to establish the inverter output voltage at the desired steady state amplitude, and including a frequency insensitive feedback circuit, having a predetermined first gain factor, from the d-c bus for determining the ratio of steady state d-c bus voltage to steady state inverter frequency;

second utilizing means for utilizing the set point voltage to establish the frequency of the inverter output voltage at the desired steady state level; and

stabilizing means, including a frequency insensitive circuit having a predetermined second gain factor, responsive to a deviation in the d-c bus voltage from the desired steady state amplitude for varying the inverter frequency to change the electrical load across the d-c bus to maintain the bus voltage constant under changing conditions, the second gain factor determining the ratio of d-c bus voltage deviation to inverter frequency deviation under changing conditions, thereby permitting the employment of different ratios for steady state and changing conditions.

4,437,051
METHOD AND APPARATUS FOR CONTROLLING INDUCTION MOTOR

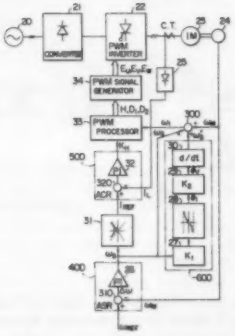
Nobuyoshi Muto; Hiroshi Nagase; Keijiro Sakai, and Yasuo Matsuda, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 15, 1982, Ser. No. 441,624

Claims priority, application Japan, Nov. 16, 1981, 56-182304

Int. Cl.³ H02P 5/40

U.S. Cl. 318—808 **4 Claims**



1. An induction motor control system comprising an inverter for producing AC power by pulse-width modulation, an induction motor powered by said inverter, a speed detector for measuring the rotational speed of said induction motor, a current detector for measuring the primary current of said induction motor, a speed controller which receives a speed command and output of said speed detector so as to provide a speed control signal, a current controller which receives said speed control signal and output of said current detector so as to provide a current control signal, an adder which adds output of said speed detector and said speed control signal so as to provide an inverter frequency command, and a pulse-width modulator which produces a pulse-width modulation signal in accordance with outputs of said current controller and said adder and supplies said pulse-width modulation signal to said inverter, wherein said system further comprises a computational means which receives said speed control signal and calculates the value of phase compensation, output of said means being supplied to said adder so that it is added to output of said speed detector and said speed control signal, output of said adder being supplied as said inverter frequency command to said pulse-width modulator.

4,437,052
STATIC VAR GENERATOR

Laszlo Gyugyi, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 17, 1981, Ser. No. 331,940

Int. Cl.³ H02J 3/18

U.S. Cl. 323—210 **4 Claims**

1. A static VAR generator, comprising:

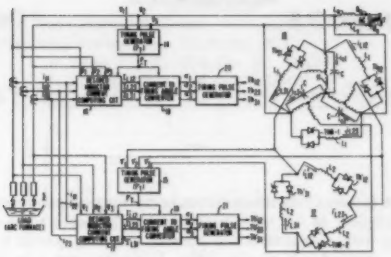
(a) a capacitive current means disposed for connection into an AC network;

(b) a first inductive current means disposed for connection into said AC network;

(c) a second inductive current means disposed for connection into said AC network;

(d) a VAR monitoring means for monitoring the reactive requirement of said AC network;

(e) a first control means connected to said first inductive current means, and said VAR monitoring means in phase with the AC network voltage for controlling connection of said first inductive current means into the AC network in response to the reactive requirements of said AC network; and



(f) a phase shifting means connected to said second inductive current means and a second control means responsive to the phase shifting means for controlling connection of said second inductive current means at a voltage phase angle leading the voltage of said first control means.

4,437,053

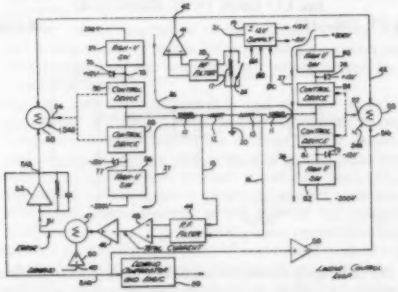
GRADIENT POWER SUPPLY

Ronald F. Bax, Columbia, Md., assignor to Diasonics (NMR) Inc., South San Francisco, Calif.

Filed May 10, 1982, Ser. No. 376,692

Int. Cl.³ G05F *1/44*

U.S. Cl. 323—268 **20 Claims**



1. A power supply for driving a coil comprising:

a source of a first potential;

a source of a second potential, said second potential being lower than said first potential;

switching means coupled to said first potential for switching said first potential;

a control device for controlling the flow of current, said device coupled in series with said switching means and said source of said second potential at one of its terminals and the other of its terminals being coupled to said coil;

control means for causing both said switching means and control device to conduct when current flow is being changed within said coil and for causing said switching means to cease conducting and said control device to conduct when the current through said coil is at a steady state, said control means being coupled to said switching means, control device and said coil;

whereby the current in said coil may be driven to a high level primarily with current from said first source of potential and then maintained at said high level with current supplied primarily from said second source of potential under control of said control devices.

4,437,054

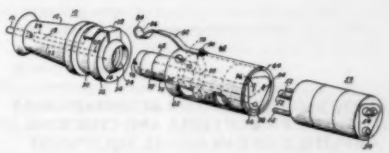
ADAPTOR TO FACILITATE TESTING OF A LAMP HOLDER

John E. Swift, Sr., Baltimore, Md., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Jan. 18, 1982, Ser. No. 340,398

Int. Cl.³ G01R *31/02*

U.S. Cl. 324—51 **3 Claims**



1. An adaptor to facilitate the testing of a lamp holder comprising:

A. a body made of electrically non-conductive material, said body having a probe made of electrically non-conductive material with a tip made of electrically conductive material, said tip made of electrically conductive material for insertion by straight line movement into the socket of a lamp holder to contact the hot lead thereof,

B. a band of electrically conductive material on said probe to contact the neutral lead of said lamp holder,

C. a spring clip attached to said body to contact the ground lead of said lamp holder, and

D. a three-hole receptacle attached to said body with one hole electrically connected to said tip, the second hole electrically connected to said band and the third hole electrically connected to said clip.

4,437,055

PROCESS FOR THE CAPACITIVE MEASUREMENT OF LENGTHS AND OF ANGLES

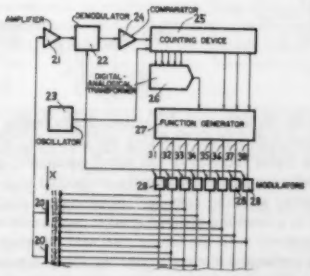
Hans U. Meyer, rue des Taneurs 3, 1110 Morges, Switzerland

Filed Nov. 20, 1981, Ser. No. 323,478

Claims priority, application Switzerland, Nov. 21, 1980, 8609/80

Int. Cl.³ G01R *27/26*

U.S. Cl. 324—61 R **8 Claims**



1. A capacitive process for the measurement of lengths and of angles, which uses a plurality of emitting electrodes (10) arranged in series, and at least one receiving electrode (20) which faces the emitting electrodes and is of less length than said series, and which is displaceable parallel to the latter, characterized in that the emitting electrodes which face a receiving electrode form two groups each one of them con-

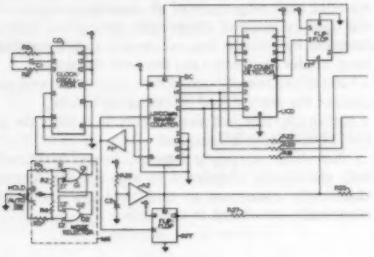
nected to an alternating voltage V_1, respectively V_2, of constant amplitude, having the same frequency and of opposite phase, separated by an emitting electrode which is connected to an alternating voltage Vx which is varied between V_1 and V_2 in a manner such that it constitutes a measurement of the displacement of the receiving electrode, the signal caught by the receiving electrode being maintained equal to zero by varying said voltage Vx, the capacities between the aforementioned emitting and receiving electrodes being, over a trajectory of at least one L, which is the shift between the center lines of two emitting electrodes, an exact linear function of the displacement.

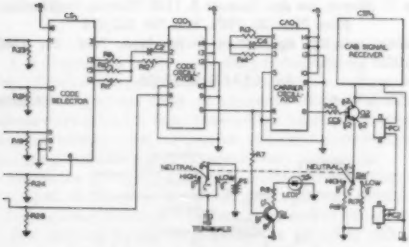
4,437,056

CAB SIGNAL TEST SET FOR AUTOMATICALLY TESTING THE PICKUP COILS AND CHECKING AN AMPLIFIER OF CAB SIGNAL EQUIPMENT

Joseph J. Pierro, Jr., Dayton, Pa., assignor to American Standard Inc., Swissvale, Pa.

Filed Mar. 31, 1981, Ser. No. 249,581
Int. Cl.³ G01R *15/12*; G08B *29/00*
U.S. Cl. 324—73 AT **13 Claims**





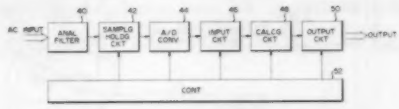
1. A cab signal test set for automatically testing the integrity of pickup coils and for checking the sensitivity of an amplifier of a cab signal receiver of cab signal equipment comprising, a mode selector means electrically connected to a clock means for starting a timing rate, said clock means electrically connected to a counting means for initiating a counting operation in accordance with the timing rate, said counting means electrically connected to a code selecting means for causing a code action, said code selecting means connected to a code oscillating means, said code oscillating means connected to a carrier oscillating means, said carrier oscillating means producing a series of modulated carrier signals and directly injecting in a sequential order a selected one of the series of modulated carrier signals into the pickup coils and receiver to simulate legitimate cab signal speed commands for verifying the functionality of the cag signal equipment.

4,437,057

FREQUENCY DETECTION SYSTEM

Sunao Suzuki, Kobe, and Koji Maeda, Takatsuki, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1982, Ser. No. 342,917
Claims priority, application Japan, Feb. 10, 1981, 56-18609
Int. Cl.³ G01R *23/02*
U.S. Cl. 324—78 R **2 Claims**



1. A frequency detection system comprising sampling means for sampling an AC input V(t) having a frequency to be detected with a predetermined constant sampling period h to form sampled values $V(t_o-2h)$, $V(T_o-h)$, $V(t_o+h)$ and $V(t_o+2h)$ where t_o designates any desired time point, and calculating means for calculating

$$y(h) = \frac{V(t_o + 2h) - V(t_o - 2h)}{V(t_o + h) - V(t_o - h)}$$

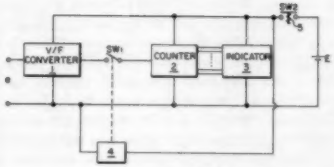
to provide a measure of said frequency of said AC input.

4,437,058

INDICATING MEANS FOR MEASURING INSTRUMENT

Dainichiro Kinoshita, Kyoto, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed Jun. 17, 1981, Ser. No. 274,368
Claims priority, application Japan, Jul. 5, 1980, 55-91988
Int. Cl.³ G01R *19/26*; G01N *27/42*
U.S. Cl. 324—120 **6 Claims**



1. An indicating means for measuring instruments producing measurement signals expressed as voltage values, said indicating means comprising a voltage-frequency converter for converting the voltage signals into frequency signals with a frequency proportional to the value of the voltage signals, frequency sensing means connected to said voltage frequency converter for sensing the frequency signals, an indicator connected to said frequency sensing means for receiving the sensed frequency and for digitally indicating the sensed frequency as a value corresponding to the measured value, a first switch connected between said voltage-frequency converter and said frequency sensing means, a power source, connected to at least one of said voltage-frequency converter, said frequency sensing means and said indicator, a second switch connected between said power source and said at least one of said voltage-frequency converter, said frequency sensing means and said indicator, for providing operating power from said power source to said at least one of said voltage-frequency converter, said sensing means and said indicator only when said second switch is closed, and a controlling means connected to said first switch, responsive to closing of said second switch, for holding said first switch in an open state for a first

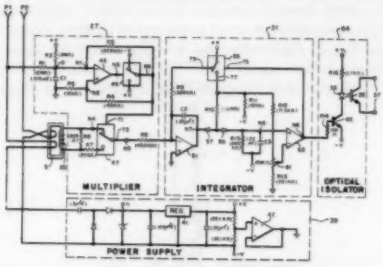
predetermined time for permitting said frequency sensing means to stabilize, and in a closed state for a second predetermined time following said first predetermined time, for enabling said frequency sensing means to sense the frequency of the frequency signals during said second predetermined time.

4,437,059

WATTMETER

Eric A. Hauptmann, Rochester, N.Y., assignor to Rochester Instrument Systems, Inc., Rochester, N.Y.

Filed Oct. 21, 1980, Ser. No. 199,379
Int. Cl.³ G01R *11/00, 21/06*
U.S. Cl. 324—142 **19 Claims**



1. A wattmeter for measuring the power passed by conductor means, comprising:

current sensing means for measuring the instantaneous current flowing in said conductor means and for generating an induced current representative of the current flowing in the conductor means;

voltage sensing means for sampling the instantaneous voltage of said conductor means with respect to a voltage reference;

multiplier means responsive to the current sensing means and voltage sensing means for generating a product signal representative of the instantaneous power passed by the conductor means;

integrator means for integrating said product signal and generating a pulsed control signal with pulses having a frequency proportional to the average power passed by said conductor means, said integrator means including,

means for integrating said product signal after each pulse of the pulsed control signal is generated and for generating a sum signal representative of the sum of the integrated product signal and a predefined power correction factor;

means for generating each pulse of said pulsed control signal for a predefined time interval when the magnitude of the sum signal is representative of a predefined value of power; and

means for defining a value of said power correction factor representative of measured power during said predefined time interval.

4,437,060

METHOD FOR DEEP LEVEL TRANSIENT SPECTROSCOPY SCANNING AND APPARATUS FOR CARRYING OUT THE METHOD

György Ferenczi; Peter Horvath; Ferenc Toth; Jozsef Kiss, and Janos Boda, all of Budapest, Hungary, assignors to Magyar Tudományos Akadémia Müszaki Fizikai Kutató Intézete, Budapest, Hungary

Filed Jun. 3, 1981, Ser. No. 269,903
Claims priority, application Hungary, Jun. 7, 1980, 1439/80
Int. Cl.³ G01R *31/26*
U.S. Cl. 324—158 D **8 Claims**

1. In a method for carrying out deep level transient spectroscopy scanning on a semiconductor junction containing traps in the neighborhood thereof by measuring a predetermined sequence of transient capacitance changes of said junction, in which each measurement of said sequence comprises the steps of:

(a) applying a high frequency signal to a diode representing said junction;

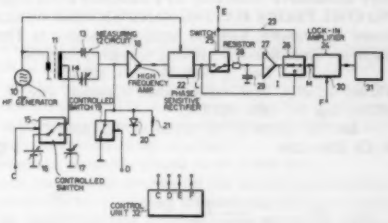
(b) applying a reverse bias voltage to said diode;

(c) applying a voltage pulse with a predetermined duration to said diode superimposed on the reversed bias voltage to provide a substantially different charge state of said traps;

(d) detecting the amplitude envelope of the capacitive signal component of said high frequency signal passed through said diode following the cessation of the pulse to form an input signal of a lock-in amplifier;

(e) repeating steps (b) to (d) periodically, in which the repetition period is substantially longer than said voltage pulse and substantially longer than the period of said high frequency signal;

(f) generating a symmetrical synchronizing pulse sequence with a repetition and duration both equal to said repetition



period in such a way that a dead period elapses between the ending moment of said voltage pulse and starting moments of said synchronizing pulse sequence to form a synchronizing signal for said lock-in amplifier;

(g) generating respective simulated signals during each of said voltage pulses and the subsequent dead periods to take values corresponding to those of said amplitude envelopes before said voltage pulses; and

(h) connecting said simulated signals to the signal input of said lock-in amplifier during the non-existence of said amplitude envelope,

whereby said lock-in amplifier is used to provide a weighted value of said amplitude envelope with said synchronizing pulse to represent the measure of the transient capacitance change in which during said scanning, the lengths of said dead periods being adjusted to form a predetermined same fraction of any corresponding repetition time period, and said measurements in said sequence being distinguishable in the temperature of said junction and/or in the lengths of the repetition periods and/or in the voltage pulses.

4,437,061

SPEED DETECTOR FOR SEWING MACHINES

Nozomu Shinozaki, Hirakata; Shigeo Neki, Osaka, and Takashi Dohi, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 30, 1981, Ser. No. 288,514
Claims priority, application Japan, Jul. 31, 1980, 55-106126
Int. Cl.³ G01R *1/04*
U.S. Cl. 324—166 **12 Claims**

1. A speed detector for a sewing machine comprising a rotor rotatable with a drive shaft of the sewing machine, a stator fixed to a housing of the sewing machine, said rotor and stator being formed of a ferromagnetic material and each having a multitude of teeth which face in opposition to the teeth of the other forming a gap therebetween, a permanent magnet forming a closed loop magnetic circuit with said rotor and stator, a coil which intersects the magnetic flux of said closed loop magnetic circuit to generate a voltage which is used to gener-

ate a train of pulses at a frequency proportional to the rotational speed of said sewing machine through an amplifier and

a waveshaping circuit, further comprising an integrating circuit connected to one of said amplifier and waveshaping circuit.

4,437,062

EDDY CURRENT TESTING APPARATUS INCLUDING A TWO COIL PROBE HAVING SANDWICHED WINDINGS

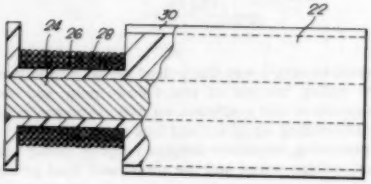
Bernard J. Donnelly, Kirkton, Scotland, assignor to Thorburn Technics (International) Limited, Glasgow, Scotland

Filed Dec. 3, 1980, Ser. No. 212,422

Claims priority, application United Kingdom, Dec. 7, 1979, 7942263; Sep. 15, 1980, 8029772

Int. Cl.³ G01N *27/90*; G01R *33/12*; H01F *27/28*

U.S. Cl. 324—238 **9 Claims**



1. An eddy current inspection probe comprising a ferrite rod, a non-conductive bobbin located on the ferrite rod and having a coil-receiving portion positioned adjacent one end of the ferrite rod and two coils wound around the rod axis in said coil-receiving portion, each coil having a first full layer of turns extending along the whole of said coil-receiving portion and a second partial layer of turns, the two said partial layers froming a common layer sandwiched between said first layers.

4,437,063

SPECIMEN HEAD FOR ELECTRON SPIN RESONANCE AND PARAMAGNETIC ELECTRON RESONANCE MEASUREMENTS

Reinhard Biehl, Karlsruhe, and Dieter Schmalbein, Marxzell-Burbac, both of Fed. Rep. of Germany, assignors to Bruker Analytische MeBtechnik GmbH, Fed. Rep. of Germany

Filed Jul. 30, 1981, Ser. No. 288,582

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1980, 3029754

Int. Cl.³ G01R *33/08*

U.S. Cl. 324—316 **16 Claims**

1. A specimen head for electron spin resonance and paramagnetic electron resonance measurements comprising:

an annularly cylindrical resonator having two end walls,

a waveguide, said waveguide being coupled to one of the end walls of said resonator,

means including said waveguide for exciting an H_{011} wave in said resonator.

the other end wall of said resonator being formed by a piston having an opening for introducing a specimen into the resonator,

said opening and said resonator being concentric,

means for shifting said piston,

means for altering the coupling of said waveguide to said resonator,

a bearing block,

a hollow piston rod,

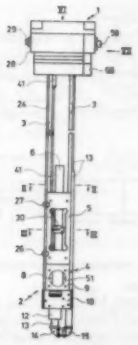
said piston being attached at the end of the hollow piston rod and mounted in the bearing block,

said bearing block containing said resonator,

said piston rod being concentric relative to the axis of said resonator and longitudinally shiftable,

said waveguide being attached to said bearing block on that side of said resonator which is opposite said piston,

said waveguide extending along the outside of said bearing block parallel to said piston rod,



drive shafts, said drive shafts being arranged on the side of said piston rod opposite said waveguide in the plane containing the axes of said waveguide and said piston rod and are mounted to said bearing block,

said drive shafts being connected to the means for shifting said piston,

said means for shifting said piston engaging said piston rod and the means for altering the coupling of said waveguide,

in which said bearing block is attached to the head member by means of rods extending parallel to said waveguide and said drive shafts,

wherein the free end of said waveguide is attached to the head member,

the free ends of said drive shafts being mounted in said head member,

said head member having a hole to receive said piston rod.

4,437,064

APPARATUS FOR DETECTING A MAGNETIC ANOMALY CONTIGUOUS TO REMOTE LOCATION BY SQUID GRADIOMETER AND MAGNETOMETER SYSTEMS

William C. Overton, Jr., and William A. Steyert, Jr., both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 22, 1981, Ser. No. 266,247

Int. Cl.³ G01V *3/26*; G01R *33/035*

U.S. Cl. 324—346 **11 Claims**

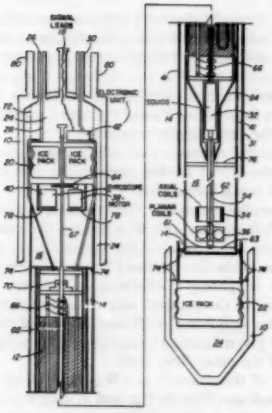
1. A SQUID magnetic detection apparatus suitable for operation at a remote location such as within a borehole, said apparatus comprising:

cryogenic housing means insertable into a borehole for containing and maintaining a cryogenic environment within:

first SQUID means secured within said cryogenic housing means, said first SQUID means having a horizontal axial position axially rotatable magnetic field sensing coil arrangement including a pair of balanced axial coils wherein

each coil in said pair of balanced axial coils is wound near an individually associated end of a high thermal conductive insulating round cylinder of approximately 2.25 inches in diameter and 1.710 inches in length, said first SQUID means for generating electrical signals representative of the magnetic field sensed by said horizontal axial position axially rotatable magnetic field sensing coil arrangement;

second SQUID means secured within said cryogenic housing means, said second SQUID means having a horizontal planar position axially rotatable magnetic field sensing coil arrangement including a pair of balanced planar coils wherein each coil in said pair of balanced planar coils comprises an approximately three turn spiral coil of approximately 1 inch outside diameter, formed upon a high thermal conductive insulating form of dimensions approximately 2⅛ inches wide by 1.5 inches high by 0.5 inches thick, said second SQUID means for generating electrical signals representative of the magnetic field sensed by said horizontal planar position axially rotatable magnetic field sensing coil arrangement;



rotation means secured with said cryogenic housing means and coupled to said horizongal axial position and said horizontal planar position axially rotatable magnetic field sensing coil arrangements for rotating simultaneously both said coil arrangements;

electronic means secured within said cryogenic housing means, said electronic means communicating with said rotation means for directing the rotating of said rotation means, said electronic means further communicating with said first and second SQUID means for receiving said electrical signals generated by said first and second SQUID means; and

remote electrical coupling means connected through said cryogenic housing means to said electronic means for facilitating remote control of said rotation means and remote monitoring of said electrical signals generated by said first and second SQUID means.

4,437,065

ARRANGEMENT FOR MONITORING CATHODICALLY PROTECTED STRUCTURES

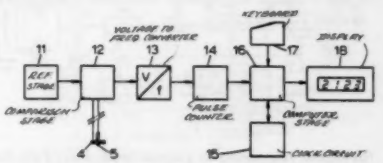
Gerrit Woudstra, Roden, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Filed Sep. 1, 1981, Ser. No. 298,520

Claims priority, application Netherlands, Sep. 12, 1980, 8005149

Int. Cl.³ G01N 27/42

U.S. Cl. 324—425 **14 Claims**



1. An apparatus for monitoring the potential with respect to the soil of a metallic structure buried in soil and cathodically protected by an externally applied DC voltage, comprising:

a measuring electrode for placement in the soil adjacent to the structure to be monitored, the electrode being electrically connected to the structure;

a reference electrode placed on or in the soil;

a measuring circuit coupled to the measuring and reference electrodes for measuring the potential difference between the measuring and reference electrodes, the measuring circuit including

a generator for generating a reference potential;

a comparator for comparing the measured potential difference between the measuring electrode and the reference electrode with the reference potential and providing a comparison signal indicative of the amount by which the measured potential difference exceeds the reference potential;

a pulse signal generator, for generating, in response to the comparison signal, a pulse stream signal having a pulse frequency proportional to the comparison signal and therefore proportional to the amount by which the measured potential difference exceeds the reference potential;

a counter for counting the number of pulses of the pulse stream signal during a measuring time cycle;

timer means for determining and recording the time interval of the measuring time cycle; and

means, coupled to the counter and timer means so as to receive data therefrom, for computing, after completion of the measuring cycle, the average value of the amount by which the measured potential has been higher than the reference potential during the measuring time cycle.

4,437,066

APPARATUS FOR SYNTHESIZING A SIGNAL BY PRODUCING SAMPLES OF SUCH SIGNAL AT A RATE LESS THAN THE NYQUIST SAMPLING RATE

Bruce E. Gordon, Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 152,015, May 21, 1980, Pat. No. 4,349,918. This application Aug. 27, 1982, Ser. No. 412,458

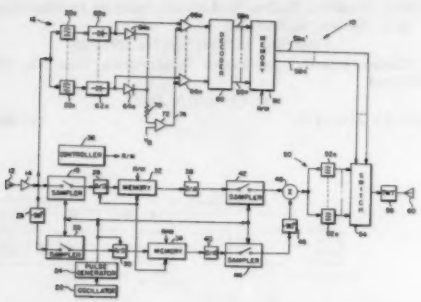
Int. Cl.³ H03K 9/06

U.S. Cl. 328—14 **4 Claims**

1. In combination:

(a) means for producing samples of a signal having a frequency f, such samples being produced at a predetermined sampling rate f_o, where f_o is less than 2f, such produced samples having a plurality of frequency components separated in frequency one from another by an amount having

a predetermined relationship to the sampling rate, one of such frequency components having the frequency f; and



(b) means, responsive to a signal indicative of the frequency f and fed by the train of produced samples, for coupling the one of the produced plurality of frequency components having the frequency f to an output.

4,437,067

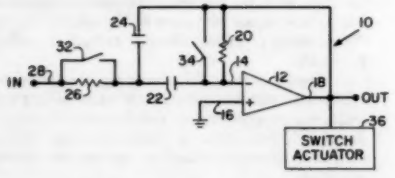
TRANSIENT ERROR REDUCTION FOR STORED CHARGED CIRCUITS

Joe A. McKenzie, Ridgecrest, Calif., and Gary D. Lowe, Prague, Okla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 2, 1980, Ser. No. 187,124

Int. Cl.[3] **H03B** *1/00, 1/04;* **H03K** *5/00;* **H04B** *1/10*

U.S. Cl. 328—167 **5 Claims**



1. An electronic circuit for eliminating transient error in a stored charge circuit without altering a transfer function, comprising:

amplification means having an inverting input for receipt of an input signal having a sharp transient rise time, a non-inverting input referenced to ground, and an output;

an input lead coupling said inverting input of said amplification means to an outside source, and having an input resistor in series with an input capacitor, said input capacitor being coupled between said input resistor and said inverting input of said amplification means for differentiation of said input signal;

a normally open input switch coupled to said input lead in parallel with said input resistor for shunting said input resistor on command;

a first feedback lead having a feedback resistor coupling said output of said amplification means to said inverting input of said amplification means;

a normally open feedback switch coupled to said first feedback lead in parallel with said feedback resistor for shunting said feedback resistor on command;

a second feedback lead having a feedback capacitor coupling said output of said amplification means to said input lead at a junction between said input resistor and said input capacitor for integration of said input signal; and

switching actuator means coupled to said output of said amplification means and having a switching command output coupled to said input switch and said feedback switch for providing a close command for a predetermined time interval to said input switch and said feedback switch to shunt said input resistor and said feedback resistor, after a pulse passes through said amplification means.

4,437,068

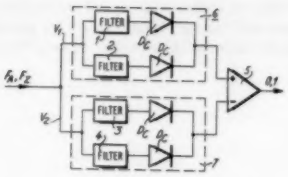
FSK DEMODULATOR FOR FREQUENCY-MODULATION MODEM

Jean E. Picquendar, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 19, 1981, Ser. No. 236,128

Int. Cl.[3] **H03D** *3/00;* **H04L** *27/14*

U.S. Cl. 329—105 **11 Claims**



1. A FSK demodulator for a frequency-modulation modem, this modem being formed from a modulator ensuring the conversion of a succession of binary signals equal to 0 or to 1 into a periodic analog signal at two different frequencies, F_A and F_Z, and a demodulator ensuring the conversion of the analog signal at two frequencies F_A and F_Z, into a succession of 0 and 1, wherein the demodulator comprises

(a) two parallel channels over which there is simultaneously sent a sine curve analog signal to be demodulated, each channel being formed by:

(i) two parallel transverse filters which comprise an n+1 stage shift register and which form the convolution between the input signal of the sampled filter and the pulse response of the filter defined by its weighting coefficients h_k, the weighting coefficients of the two filters being functions of the product $\omega p\tau$, a given function $f_R(\omega p\tau)$ being the weighting coefficient of one of the filters, and another given function $f_I(\omega p\tau)$ being the weighting coefficient of the other filter with:

for one of the channels $\omega = W_A = 2\pi F_A$ and for the other channel $\omega = W_Z = 2\pi F_Z$ and in which

τ, is the delay with which the shifting of a sample takes place from one stage of the register to the next;

p is varying from 1 to n and $n\tau$ such that n is limited to the duration of the baud of the modem; and

with W_A and W_Z depending on the channel, the maximum of $f_R(\omega p\tau)$ equal to that of $f_I(\omega p\tau)$ and with a phase shift of $\pi/2$ between f_R and F_I and

(ii) a device ensuring the squaring of the signal from each filter; and

(b) a differential amplifier receiving the signal from the two channels and supplying the output signal of the demodulator.

4,437,069

LOW NOISE TUNED AMPLIFIER

Leonard L. Kleinberg, Greenbelt, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 12, 1981, Ser. No. 272,839

Int. Cl.[3] **H03F** *1/34*

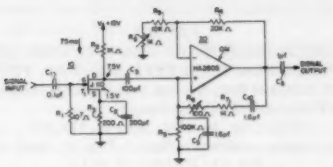
U.S. Cl. 330—109 **10 Claims**

1. A tuned, low noise amplifier comprising:

a first amplifying stage including a field effect transistor with

gate, drain and source connections and having both signal input and signal output means;

a second amplifying stage driven by said first amplifying stage from said first stage signal output means and including an operational amplifier having inverting and non-



inverting inputs and a second stage signal output means, said operational amplifier being loaded in a reactive impedance bridge configuration and said second stage reflecting a negative resistance in parallel with said first stage signal output means.

4,437,070

AMPLIFIER ARRANGEMENT WHOSE OVERALL GAIN IS CONTROLLABLE BY MEANS OF A CONTROL VOLTAGE

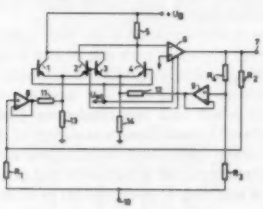
Manfred Horl, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 22, 1981, Ser. No. 227,334

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007715

Int. Cl.³ H03F *3/45, 1/34;* H03G *3/20*

U.S. Cl. 330—254 **16 Claims**



1. An amplifier arrangement comprising a first amplifier having at least one input and an output, a second amplifier having a low-pass frequency characteristic and an input coupled to the output of the first amplfier and an output coupled by means of at least one negative feedback branch to an input of the first amplifier to provide negative feedback, and control voltage means coupled to an input of said first amplifier for varying the negative feedback and thereby the overall gain of the amplifier arrangement, said control voltage means also being coupled to the second amplifier for varying the gain of the second amplifier such that for an increase in the overall gain of the amplifier arrangement the gain of the second amplifier also increases.

4,437,071

DEVICE FOR THE RECOVERY OF A CLOCK SIGNAL FROM A BINARY SIGNAL

Daniel Rougeolle, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 7, 1981, Ser. No. 328,260

Claims priority, application France, Dec. 9, 1980, 80 26075

Int. Cl.³ H03L *7/08*

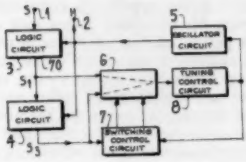
U.S. Cl. 331—1 A **7 Claims**

1. A device for the recovery of a local clock signal H from a binary signal S, comprising:

an oscillator circuit having a frequency-control input and an output for delivering the clock signal H;

first logical means having a first input for receiving the binary signal S, a second input for receiving the clock signal H and having an output for delivering a logical signal S_1 representing the sign of the phase difference between the signals S and H;

second logical means having a first input for receiving the signal S_1 from said first logical means output, a second input for receiving the clock signal H and having an output for delivering a logical signal S_3 representing the sign of the frequency difference between the signals S and H;



a switching circuit having a first and a second input for receiving respectively the signals S_1 and S_3 from the outputs of said first and second logical means, a control input and an output for delivering one of the signals S_1 or S_3 according to the signal applied to the control input;

a switching control circuit having a first input for receiving the signal S_3 from said second logical means, a second input and an output connected to the control input of the switching circuit;

a tuning control circuit having an input coupled to the output of the switching circuit and an output coupled to the second input of said switching control circuit and also to the control input of the oscillator circuit for delivering a control voltage to the oscillator circuit.

4,437,072

LOCK DETECTING CIRCUIT FOR PHASE-LOCKED LOOP FREQUENCY SYNTHESIZER

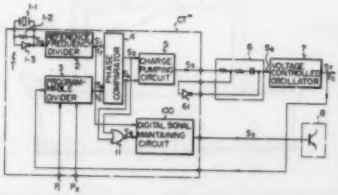
Fumitaka Asami, Kunitachi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 179,898, Aug. 20, 1980, abandoned. This application Sep. 21, 1982, Ser. No. 420,633

Claims priority, application Japan, Aug. 23, 1979, 54-107392

Int. Cl.³ H03L *7/18*

U.S. Cl. 331—1 A **12 Claims**



1. A phase-locked loop circuit comprising:

a reference oscillator providing a first output signal;

a reference frequency divider, operatively connected to said reference oscillator, for dividing the frequency of the first output signal of said reference oscillator by a predetermined value and producing a second output signal having a frequency corresponding to the divided frequency of the first output signal;

a voltage controlled oscillator providing a third output signal;

a programmable frequency divider, operatively connected

to said voltage controlled oscillator, for dividing the frequency of the third output signal by a controlled variable value to produce a fourth output signal;

a phase comparator, operatively connected to said programmable frequency divider and said reference frequency divider, for receiving and monitoring the difference in phase between the fourth and second output signals and providing first and second phase output signals, respectively;

a low pass filter, operatively connected between said phase comparator and said voltage controlled oscillator, for controlling said voltage controlled oscillator in dependence upon the first and second phase output signals of said phase comparator;

lock detector means, operatively connected to said phase comparator, for generating a first lock detecting signal which is pulsed when a difference in phase is detected between said fourth and second output signals; and

digital signal maintaining circuit means, operatively connected to said lock detector means and said reference frequency divider, for converting the first lock detecting signal into a second lock detecting signal having a direct current level, maintaining the second lock detecting signal for a predetermined time after the first lock detecting signal is extinguished and providing an output signal, said digital signal maintaining circuit means comprising:

converter circuit means, operatively connected to said reference frequency divider and said lock detector means, for converting the first lock detecting signal into the second lock detecting signal in dependence upon the second output signal and outputting the second lock detecting signal; and

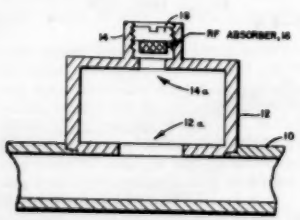
maintaining circuit means, operatively connected to said converter circuit means, for maintaining the potential of the second lock detecting signal for the predetermined time after the first lock detecting signal is extinguished and providing the output signal.

4,437,073

EQUALIZER CAVITY WITH INDEPENDENT AMPLITUDE CONTROL

Herbert L. Thal, Jr., Tredyffrin Township, Chester County, Pa., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 9, 1982, Ser. No. 347,384
Int. Cl.³ H01P *5/00*; H03H *7/03*
U.S. Cl. 333—28 R **6 Claims**



1. An equalizer cavity apparatus with independent amplitude control comprising in combination:

a rectangular waveguide for carrying an electromagnetic energy;

an equalizer cavity means mounted on the top surface of said rectangular waveguide, said equalizer cavity means being directionally coupled to said rectangular waveguide to receive a predetermined amount of said electromagnetic energy through an opening between said equalizer cavity means and said rectangular waveguide, and,

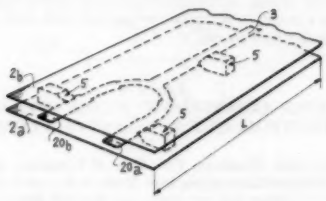
a circular waveguide means positioned on the top surface of said equalizer cavity means, said equalizer cavity means including an aperture in its top surface to allow said electromagnetic energy therein to enter said circular waveguide means, said circular waveguide means including means for absorbing RF energy and means for positioning said RF absorber means within said circular waveguide means.

4,437,074

ULTRAHIGH-FREQUENCY TRANSMISSION LINE OF THE THREE-PLATE AIR TYPE AND USES THEREOF

Georges Cohen, and Jean Heroux, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 14, 1981, Ser. No. 330,319
Claims priority, application France, Dec. 18, 1980, 80 26912
Int. Cl.³ H01P *3/08, 5/12*
U.S. Cl. 333—128 **15 Claims**



1. An ultrahigh frequency transmission line comprising:

two parallel conducting plates spaced apart from each other and connected electrically together, the space separating these two plates being filled with air;

a central conducting strip placed between said two plates and parallel thereto; and

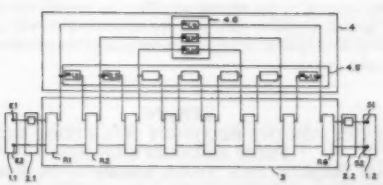
a plurality of support pieces made from a dielectric material and spread out along each side of said strip, each support piece being a parallelpipedic block mounted transversely with respect to said strip and having lower and upper faces on which said two conducting plates are respectively placed so as to bear on said faces of said block, each of said blocks comprising a longitudinal tapered extension and a notch provided at the end of said extension in which a side of said strip is positioned so as to be held in place.

4,437,075

SELF-CORRECTED ELECTRIC FILTERS

Corinne Darmouni, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 7, 1982, Ser. No. 337,751
Claims priority, application France, Jan. 23, 1981, 81 01294
Int. Cl.³ H03H *7/03, 7/075*
U.S. Cl. 333—167 **3 Claims**



1. A self-corrected electric filter with localized constant elements for filtering a wide band input signal which comprises:

filtering means constituted by a group of n resonators R1 to Rn, n being an even number, n−2 resonators of the group

being ordered in cascade between the first resonator R1 and the final resonator Rn;

input impedance matching means connected to said first resonator R1 for applying said wide band input signal to said filtering means;

output impedance matching means connected to said final resonator Rn for constituting the output of said self corrected electric filter;

correction means comprising a first group of coupling means Mi,i+1, whereby i is a positive integer and takes all the possible values from 1 to n−1, each coupling means Mi,i+1 connecting two adjacent resonators Ri and Ri+1, said group of n resonators being self inductive except for the coupling means connecting the two central resonators which is capacitive, said correction means also comprising a second group of secondary coupling means MK,1, each secondary coupling means connecting a Kth and a 1th resonator RK and R1 of said group of n resonators, whereby K takes all possible values from 1 to (n−2)/2 individually, and 1 is equal to n−(K−1), for contributing to arithmetic symmetry of the amplitude and of the group delay time for correcting distortion of group delay time.

4,437,076

COAXIAL FILTER HAVING A PLURALITY OF RESONATORS EACH HAVING A BOTTOMED CYLINDER

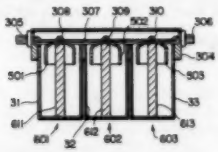
Mitsuo Makimoto, Yokohama; Haruyoshi Endo, Sagamihara; Ko Kikuchi, Tokyo, and Sadahiko Yamashita, Sagamihara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 16, 1982, Ser. No. 348,766

Claims priority, application Japan, Feb. 17, 1981, 56-22602

Int. Cl.³ H01P *1/205, 7/05*

U.S. Cl. 333—206 **12 Claims**



1. A coaxial filter arrangement comprising:

(a) a plurality of resonators each having:

a center conductor;

a metallic cylinder having a bottom and a peripheral wall portion with a predetermined diameter, said metallic wall portion being attached to one end of said center conductor in such a manner that said peripheral wall portion surrounds said center conductor; and

an outer conductor having a closed end and an open end, said closed end being connected to the other end of said center conductor so that said outer conductor is coaxially arranged with said center conductor, the axial length of said outer conductor being shorter than that of said center conductor so that said metallic cylinder is received in the bore of said outer conductor with a maximum diameter portion of said peripheral wall portion being received entirely in said bore; and

(b) a dielectric plate having coupling capacitances for coupling said plurality of resonators to form said filter, said dielectric plate being positioned apart from the open end of each of said outer conductors by a predetermined distance.

4,437,077

SEMICONDUCTOR DEVICE USABLE AT VERY HIGH FREQUENCIES AND ITS PRODUCTION PROCESS

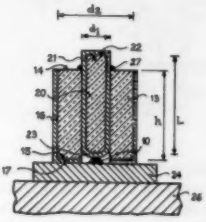
Raymond Henry, and Michel Heitzmann, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jul. 31, 1981, Ser. No. 288,690

Claims priority, application France, Aug. 8, 1980, 80 17533

Int. Cl.³ H01P *1/00*

U.S. Cl. 333—245 **4 Claims**



1. A semiconductor device comprising:

a diode of the type able to operate at a very high frequency, a pedestal, said diode being welded on said pedestal, and a coaxial line with presettable impedance constituted by

a cylindrical ring concentric to the diode, said ring being made from dielectric material and having an outer cylindrical surface and one of its ends metal-coated, the metal coated one end being welded on the pedestal,

and a cylindrical mandrel having an external diameter smaller than the internal diameter of the cylindrical ring, said mandrel having a length slightly exceeding the length of said cylindrical ring, said mandrel having a convex end in contact with the diode and an opposite planar end, the external surface of said mandrel supporting at least one metal coating which is a good conductor of electricity.

4,437,078

POLARIZED ELECTROMAGNETIC DEVICE

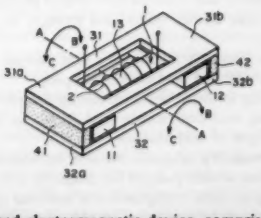
Yoshihide Bando, Kyoto; Toshiki Tanaka, Yawata; Sueaki Honda, Uji; Yoshihiko Takahashi, Kyoto; Kenichi Tsuruyoshi, Omihachiman; Katsumi Kawashima, Shiga, and Syuichi Kishimoto, Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Nagaokakyo, Japan

Filed May 14, 1981, Ser. No. 263,495

Claims priority, application Japan, Feb. 3, 1981, 56-15229; Mar. 3, 1981, 56-30764; May 16, 1981, 56-65128

Int. Cl.³ H01H *51/22*

U.S. Cl. 335—81 **10 Claims**



1. A polarized electromagnetic device, comprising:

a generally I-shaped magnetic core member carrying a coil winding on the central portion thereof;

a pair of permanent magnets which are arranged in parallel with and outwardly of the respective end portions of said core member; and

first and second armature plate members which are mutually

confronting and joined together through said pair of permanent magnets at the opposite end portions of said armature plate members, thereby presenting a spacing for accommodating said core member therebetween with gaps between said plate members and said core member;

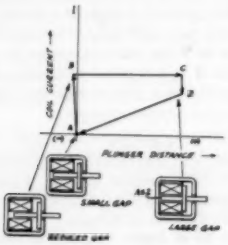
said core member and armature plate members being supported to be swingable for relative movement with respect to a center transverse axis of said center portion of the core member.

4,437,079

MAGNETIC SNAP LATCH

Jerome K. Hastings, Sussex, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 29, 1982, Ser. No. 427,336
Int. Cl.³ H01H 9/20
U.S. Cl. 335—170 **10 Claims**



1. A magnetic snap latch comprising:

a magnetic circuit comprising a magnetic frame;

a magnetic plunger extending into said frame and having an internal end therewithin and an external end adapted to be coupled to a driven element;

said magnetic circuit also comprising means defining an air gap between said internal end of said plunger;

said magnetic circuit when said plunger is in its normal position;

and means normally maintaining said plunger in its normal position whereby said air gap is open;

a coil having terminal wires extending therefrom and means mounting said coil within said frame to surround said internal end of said plunger;

a low permeability magnetic member secured to an intermediate point of said plunger for magnetic attraction to said frame upon initial energization of said coil to restrain said plunger from being moved by the magnetic force in said air gap;

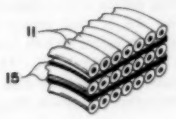
and said low permeability magnetic member reaching magnetic saturation before said magnetic frame whereby the magnetic force in said air gap causes snap action movement of said plunger in the closing direction of said air gap.

4,437,080

METHOD AND APPARATUS UTILIZING CRYSTALLINE COMPOUND SUPERCONDUCTING ELEMENTS HAVING EXTENDED STRAIN OPERATING RANGE CAPABILITIES WITHOUT CRITICAL CURRENT DEGRADATION

John W. Ekin, Boulder, Colo.; John R. Gavaler, and Aleksander I. Braginski, both of Pittsburgh, Pa., assignors to The United of America as represented by the Secretary of Commerce and the Secretary of the Air Force and The United States of America as represented by the Secretary of the Air Force, both of Washington, D.C.

Filed Feb. 14, 1983, Ser. No. 465,942
Int. Cl.³ H01F 7/22
U.S. Cl. 335—216 **20 Claims**



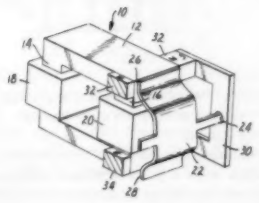
1. In an apparatus for utilizing electrical energy, a superconducting element having intrinsic elastic strains of magnitude greater than 0.4% imposed thereon, said superconducting element being formed from a crystalline compound superconductive material that is capable of withstanding said intrinsic elastic strains imposed on said superconductive material in said element without appreciably degrading the critical current of said element when said superconducting element is subjected to a magnetic field having its component normal to the current carrying direction of said element greater than 8 Tesla.

4,437,081

ROCKING ARMATURE TRANSFORMER RELAY

Gerald A. Wyatt, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 28, 1982, Ser. No. 453,834
Int. Cl.³ H01F 7/08
U.S. Cl. 335—229 **3 Claims**



1. An electromagnetic device, comprising:

a ferromagnetic core having first and second legs completing a closed magnetic circuit;

an armature pivotably mounted in said electromagnetic device for optionally contacting said ferromagnetic core; said armature and said ferromagnetic core defining a gap between said ferromagnetic core and said armature at the opposite side of said ferromagnetic core from the side of said ferromagnetic core at which said armature is contacting said ferromagnetic core;

a flux return bracket mounted in said electromagnetic device between said pivotably mounted position of said armature and said ferromagnetic core;

a source of latching flux cooperating with said ferromagnetic core, said flux return bracket and said armature for

holding said armature in contact with said ferromagnetic core; and

a source of operating flux cooperating with said ferromagnetic core for selectively establishing a magnetic flux across said gap;

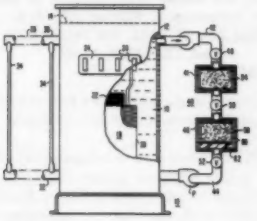
whereby said armature may be pivotably moved from contact with said ferromagnetic core one side of said armature to contact with said ferromagnetic core on the other side of said armature.

4,437,082

APPARATUS FOR CONTINUALLY UPGRADING TRANSFORMER DIELECTRIC LIQUID

Edward J. Walsh, and Robert A. Kurz, both of Hermitage, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 12, 1982, Ser. No. 397,288
Int. Cl.³ H01F *27/10*
U.S. Cl. 336—58 **9 Claims**



1. An apparatus for continually upgrading transformer dielectric fluid by degassing, demoisturizing, and filtering the fluid, comprising:

a tank,

a dielectric fluid having a low vapor pressure disposed in the tank and containing contaminants including moisture, gases, and insoluble particulates,

an electrical winding immersed within the fluid in the tank,

filter means for decontaminating the fluid including a fluid recirculating device for degassing, demoisturizing, and filtering the fluid,

the fluid recirculating device for degassing including a permeation cell having a membrane material and within a supportive container,

the fluid recirculating device for demoisturizing including granular pellets of a desiccant material for reducing moisture in the fluid to 20 ppm or less at room temperature,

whereby decontaminated fluid is returned into the tank.

4,437,083

CURRENT TRANSFORMER FOR TURBINE GENERATORS

Franklin T. Emery, Greentree Borough, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

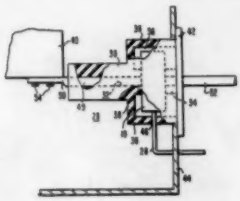
Filed Jan. 19, 1982, Ser. No. 340,666
Int. Cl.³ H01F *15/02*
U.S. Cl. 336—65 **2 Claims**

1. A current transformer mounting arrangement comprising:

an annularly shaped current transformer having a conductor extending centrally therethrough and a cable extending from an outer portion thereof;

an enclosure of generally rigid insulative material having said transformer disposed therein and comprising a first member having a bore through which said conductor extends, a first portion of said first member disposed through the inside diameter of said current transformer and a second portion of said first member extending axially from said first portion on a first, inboard, side of said current transformer, a second member disposed around the outside diameter of said current transformer, said second member and said first portion of said first member being generally coaxial, and a third member that joins said first and second members on said inboard side of said current transformer;

said enclosure having an opening through which said cable extends;



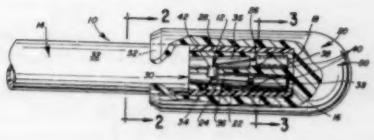
said enclosure second member being fit within an opening of a fixed wall of conductive material, and an enclosure fourth member located against the outside of said wall and joined to an outboard portion of said second member, said fourth member having an opening through which said conductor extends.

4,437,084

ENCAPSULATED, WATERPROOF TEMPERATURE SENSITIVE DEVICE AND METHOD OF MANUFACTURE

Harold K. Clayton, Jr., Glen Ellyn, Ill., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Oct. 9, 1981, Ser. No. 310,057
Int. Cl.³ H01C *7/13*
U.S. Cl. 338—22 R **6 Claims**



1. An encapsulated, waterproof temperature sensitive device comprising:

an elongated cable including two conductors, and a cable jacket surrounding said conductors, the proximal ends of said conductors extending proximally beyond the proximal end of said cable jacket;

a temperature sensor with two leads, each lead being connected to the proximal end of a respective one of said conductors, said temperature sensor having an electrical property systematically related to the temperature of said sensor, whereby an electrical signal indicative of temperature may be sensed at the distal ends of said conductors;

means for electrically insulating one of said leads and respective conductor from the other of said leads and respective conductor;

tubing of insulating material extending from adjacent said jacket and surrounding said temperature sensor, said leads and the proximal ends of said conductors;

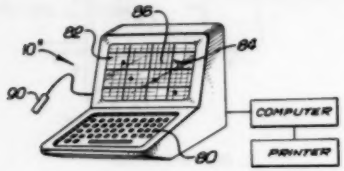
a substantially solid, molded shroud encapsulating said tubing, said temperature sensor, said leads, the proximal ends of said conductors, and the proximal end of said jacket, said shroud having at least one passageway extending from its exterior to said tubing between the ends of said tubing, said shroud being sealed to said jacket around its entire circumference and sealed to said tubing around all said passageways so as to waterproof said device.

4,437,085

ROUTE MAPPING DEVICE

Richard Salant, 2170 Century Park East, Suite 2008, Los Angeles, Calif. 90067

Filed Oct. 3, 1980, Ser. No. 193,657
Int. Cl.³ G08G 1/00; G08C 21/00
U.S. Cl. 340—286 M 12 Claims



1. A delivery route mapping device for ground vehicles comprising:

a computer device;

a cathode ray tube (CRT) having a display surface;

a translucent map disposed on the display surface of the CRT, said CRT being in communication with the computer device which is programmed to direct the display of said CRT;

means for entering into said computer device a list of customers to whom deliveries are to be made;

means responsive to the entering means, for directing said computer to cause the CRT to display a plurality of lights behind said map, each said light corresponding to a location of a customer to whom deliveries are to be made; and

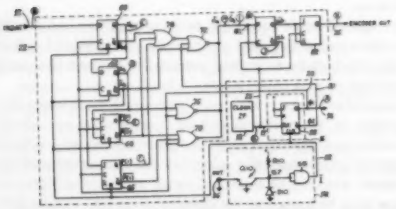
means for associating each said light with the name of the customer to whom said light corresponds.

4,437,086

LIMITED LOOK-AHEAD MEANS

Jerry W. Miller, Menlo Park, and Paul J. Rudnick, Oakland, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 949,161, Oct. 5, 1978, abandoned. This application Mar. 17, 1980, Ser. No. 131,042
Int. Cl.³ H03K 13/24
U.S. Cl. 340—347 DD 10 Claims



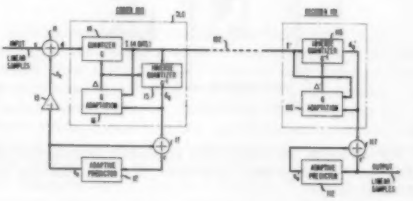
6. In a self-clocking method for transmitting binary data bits sequentially in successive clocked bit cells of a transmission channel wherein logical first bit states of a sequence of data bit states are normally transmitted by signal transitions relatively early in respective bit cells and logical second bit states of said sequence of data bit states are normally transmitted as signal transitions relatively late in respective bit cells and any transition relatively early in a bit cell following a transition relatively late in the next preceding bit cell is normally suppressed, said method including generating a first indicating signal when the number of first bit states in the sequence of data bit states is of a predetermined parity, detecting the onset of a sequence of second bit states following a first bit state productive of said predetermined parity that might introduce a DC component into the transmitted signal with normal transmission, and in response to said first indicating signal, the state of a current bit and the state of an adjacent bit modifying the transmission of signal transitions from the onset of such sequence to eliminate any DC component, the improvement comprising in response to said first indicating signal examining a limited number greater than two of bits next succeeding a current bit to determine at the onset of any such sequence if the sequence terminates within said limited number of next succeeding bits and would not introduce such DC component with normal transmission, and inhibiting said modifying of the transmission of signal transitions corresponding to any of the second bit states of such sequence that would not introduce such DC component with normal transmission.

4,437,087

ADAPTIVE DIFFERENTIAL PCM CODING

David W. Petr, Red Bank, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 27, 1982, Ser. No. 343,355
Int. Cl.³ H03K 13/01
U.S. Cl. 340—347 DD 43 Claims



1. A coder (100) for converting a linear input signal representative of encoded speech, voiceband data or tone signals into a quantized differential PCM output signal, the input signal being coupled to the input of a difference circuit (11) along with a signal estimate of said input signal to obtain a difference signal indicative of the difference therebetween, a predictor means (12) for producing said signal estimate, an adaptive quantizing means (DLQ) for receiving said difference signal and providing at its output a quantized version of the difference signal, and means (17) for adding said quantized version of the difference signal with said signal estimate and coupling the sum to the input of said predictor means,

said adaptive quantizing means being characterized by,

means (FIG. 2) for dynamically controlling said adaptive quantizing means speed of adaptation including, means for producing a fast speed of adaptation when the input signal represents speech signals and a slow speed of adaptation when the input signal represents encoded voiceband data or tone signals.

4,437,088

ELECTRICAL SIMULATION OF PERCUSSIVE BELL

Harry D. Ferguson, Owen Sound, Canada, assignor to General Signal Corporation, Stamford, Conn.

Filed Nov. 19, 1981, Ser. No. 323,520
Int. Cl.³ G08B 1/00
U.S. Cl. 340—384 E 18 Claims

1. An electronic bell which produces a signal which sounds like a standard electromechanical bell comprising in combination:

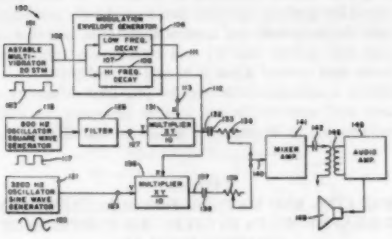
(a) a rate generator for producing an output signal at a predetermined stroke rate that determines the ringing frequency of the bell sound;

(b) a modulation envelope generator for producing a low frequency and a high frequency decaying exponential control signal in response to signals from said rate genera-

tor wherein said low frequency signal has a first time constant and said high frequency control signal has a second time constant, said first time constant being longer than said second time constant;

(c) first and second audio frequency generators of first and second frequencies, respectively;

(d) first and second modulating means coupled to said first and second audio frequency generators and said first and second decaying exponential control signals, respectively,



for producing first and second signals comprising modulations of said first and second audio frequencies, respectively;

(e) mixing means coupled to said first and second modulated output signals for mixing the same; and

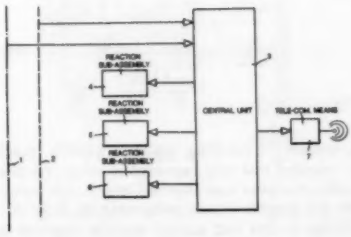
(f) a loudspeaker and coupling means coupling said mixed audio frequencies to said loudspeaker for producing an audible sound characteristic of a vibrating bell struck at the frequency of said rate generator.

4,437,089

DUAL SENSITIVITY INTRUSION DETECTION SYSTEM

Serge Achard, Marly-Le-Roi, France, assignor to S.A. Promocab, Versailles, France

Filed Jun. 23, 1981, Ser. No. 276,498
Claims priority, application France, Jun. 24, 1980, 80 13982
Int. Cl.³ G08B 13/22, 29/00
U.S. Cl. 340—541 10 Claims



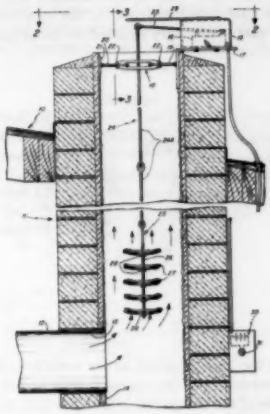
1. A system for protecting a zone against human aggression, comprising at least two circuits of sensors for detection of human presence, said sensor circuits arranged within said zone and capable of producing electric signals when they detect a human presence, response means activated by said electric signals for indicating human presence, electronic processing means arranged between the sensors for detection of human presence and the response means, to operate first response means when they receive an electrical signal from a detection sensor of a first circuit of sensors and second response means when they receive an electrical signal from a detection sensor of a second circuit of sensors, said electronic processing means comprising means to increase the sensitivity of the sensors of the second circuit of sensors at the time of reception of a signal from a sensor of the first circuit of sensors.

4,437,090

APPARATUS FOR INDICATING CREOSOTE BUILDUP IN A CHIMNEY

R. Edward Hanson, 12 Dale St., Hallowell, Me. 04347

Filed Dec. 31, 1980, Ser. No. 221,781
Int. Cl.³ G08B 21/00
U.S. Cl. 340—613 12 Claims



1. Apparatus for indicating creosote in the flue of a chimney, said apparatus including an accumulator through which chimney flue gases will flow with creosote becoming deposited thereon when the accumulator is within the flow and the chimney in service, said accumulator of a cross sectional size and shape such that it may be a free fit within the flue without adversely affecting the draft therethrough, a normally open switch having an operating arm operable to effect the closing of the switch when a predetermined weight is applied to said arm, means to attach said switch to the upper end of the chimney, a suspending member connected to said arm and said accumulator when the switch is attached to said chimney, said connecting means then holding said accumulator centrally of the flue and in a position lengthwise thereof where a major buildup of creosote is anticipated, the weight of the accumulator and connecting means insufficient to effect the closing of said switch until creosote has built up on the surface of said accumulator to so increase said weight as to apply said weight, and a circuit including said switch and a warning signal operable when said circuit is closed by said switch.

4,437,091

FLUID-QUANTITY ALARMING DEVICES FOR THE MASTER CYLINDER

Yoshinobu Mizusaki, Ueda, Japan, assignor to Nissin Kogyo Co., Ltd., Ueda, Japan

Filed May 22, 1981, Ser. No. 266,224
Claims priority, application Japan, Jul. 24, 1980, 55-104976
Int. Cl.³ G08B 21/00
U.S. Cl. 340—623 5 Claims

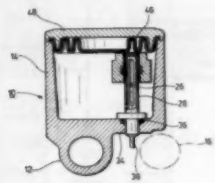
1. A fluid-quantity alarming system for a brake cylinder comprising;

a brake master cylinder body;

a reservoir connected to said cylinder body, said reservoir being substantially in an elongated rectangular parallelepiped form and being disposed on said cylinder body so that the central axis of the reservoir in an elongated direction is biased relative to the central axis of the master cylinder, said reservoir including an opening at the bottom thereof in a plane passing through the central axis of the master cylinder body for fluid communication between the master cylinder body and the reservoir, an attachment hole

located adjacent to a wall of the reservoir away from the central axis of the master cylinder and the opening, and at least one blind female screw adjacent to the attachment hole extending downwardly from the inside of the reservoir,

a switch case including a switch therein with a lead extending from the switch, a flange attached to the lower part of the switch case with a hole therein, and a screw, said switch case being disposed in the reservoir such that a lower end is sealingly situated in the attachment hole to



permit the lead attached to the switch to extend outside the reservoir, and the screw is disposed to pass through the hole of the flange and is fastened with the blind female screw, and

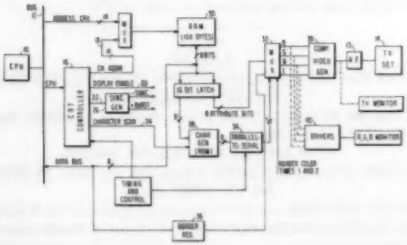
a float disposed around the switch case to be vertically moved in accordance with liquid level in the reservoir, said float having such dimensions that it is not located above the opening so that the fluid passing through the opening does not affect the float, and means to actuate the switch when the float is located beside the switch.

4,437,092

COLOR VIDEO DISPLAY SYSTEM HAVING PROGRAMMABLE BORDER COLOR

Mark E. Dean, Boynton Beach, Fla.; Lewis C. Eggebrecht, Rochester, Minn.; David A. Kummer, Boca Raton, and Jesus A. Saenz, Coral Springs, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 12, 1981, Ser. No. 292,069
Int. Cl.³ G09G *1/28*
U.S. Cl. 340—703 **3 Claims**



1. A color video display system comprising:

a color cathode-ray tube display;

central processing means for providing a signal defining a normal display area and first data representing video information to be displayed on said cathode-ray tube display in said normal display area of said cathode-ray tube display and second data representing a color of a predefined border area completely surrounding said normal display area and extending to all display edges of said cathode-ray tube display;

means operating in response to vertical and horizontal synchronizing signals of said display and said display area defining signal for generating a control signal having a first state when a scanning beam of said cathode-ray tube display is scanning said normal display area and a second state when said scanning beam is scanning said border area; and

multiplexer means operating in response to said control signal for applying said first data to said color cathode-ray tube display when said control signal is in said first state and said second data to said cathode-ray tube display when said control signal is in said second state;

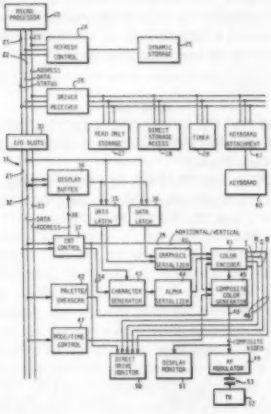
whereby a selected color may be provided in said border area and memory limited to that necessary for storing information to be displayed in said normal display area.

4,437,093

APPARATUS AND METHOD FOR SCROLLING TEXT AND GRAPHIC DATA IN SELECTED PORTIONS OF A GRAPHIC DISPLAY

David J. Bradley, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 12, 1981, Ser. No. 292,081
Int. Cl.³ G09G *1/16*
U.S. Cl. 340—726 **6 Claims**



1. A method for scrolling, within a window, graphic and graphic encoded text data prestored in rows of a display refresh buffer of a raster scan all-points-addressable video display operable in a graphics mode, comprising the steps of:

specifying in first and second machine registers opposite corners of a window, the window comprising a portion only of a video display screen, and in a third machine register the number of rows to be scrolled;

establishing a destination pointer addressing the row specified by said first machine register;

establishing a source pointer addressing a row offset from the row specified in said first machine register by the number of rows to be scrolled specified in said third machine register; and

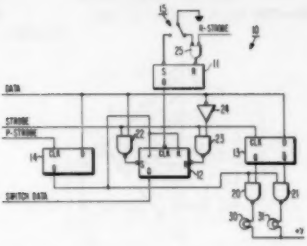
moving a row bounded by said window within said window in said display refresh buffer from the location addressed by said source pointer to the location addressed by said destination pointer, altering the source pointer and destination pointer by one row, and repeating the moving and altering steps for each row to be scrolled.

4,437,094

SYSTEM FOR CONTROLLING INDICATORS FOR SWITCHES

Joe W. Fish, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 15, 1981, Ser. No. 311,513
Int. Cl.³ H04Q *9/00*; G08B *21/00*
U.S. Cl. 340—825.5 **14 Claims**



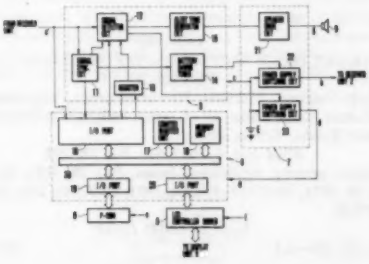
1. In a system which includes a plurality of switches and indicator means associated with each switch, in combination:
means responsive to the actuation of solely one of the switches for causing the indicator means associated therewith to change from a first to a second condition; and
means responsive to the concurrent actuation of more than one of the switches for preventing the respective indicator means associated with said more than one switch from being changed in condition.

4,437,095

SELECTIVE CALL RECEIVER HAVING TIMED POWER SUPPLY

Masaaki Akahori; Takashi Ohyagi, both of Tokyo, and Shozo Nishimura, Zushi, all of Japan, assignors to Nippon Electric Co., Ltd. and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan

Filed Dec. 1, 1981, Ser. No. 326,321
Claims priority, application Japan, Dec. 1, 1980, 55-167966
Int. Cl.³ H04Q *9/14*; H04B *1/16*; G08B *5/22*
U.S. Cl. 340—825.44 **2 Claims**



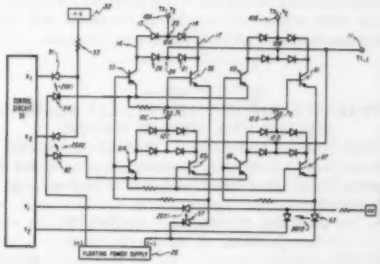
1. A selective call receiver with display comprising:
receiver means which receives electromagnetic waves and produces digital received signals;
display means to display received data;
display controller means for controlling said display means;
memory means which stores call numbers;
means responsive to a decoded signal to indicate the paging of the receiver;
reception controller means powered by a power supply, said reception controller means, upon receipt of the digital received signals produced by the receiver means, generating synchronizing pulse signals and comparing said digital received signals with said call number to provide said decoded signal, said reception controller further generating timing signals for connecting and disconnecting the power supply from receiver means and said display controller means;
first switching means which controls the connecting and disconnecting of the power supply to said receiver means in response to said timing signals; and
second switching means which controls the connecting and disconnecting of the power supply to the display controller means in response to said synchronizing pulse signals.

4,437,096

CONCENTRATOR CIRCUIT INCORPORATING SOLID STATE BILATERAL BRIDGE ARRANGEMENT

Barrie Brightman, and Frank Niertit, both of Casselberry, Fla., assignors to Stromberg-Carlson Corp., Tampa, Fla.

Filed Dec. 30, 1981, Ser. No. 335,593
Int. Cl.³ H03K *17/00*; H04Q *3/52*
U.S. Cl. 340—825.96 **6 Claims**



1. A concentrator circuit for selectively conveying signals between a plurality of first terminals and a second terminal, said concentrator circuit comprising:
A. a plurality of bilateral current gate means for selectively coupling signals between the first terminals and the second terminal, each bilateral current gate means including a plurality of diodes connected to define input and output junctions and first and second balance point junctions, a first terminal being connected to each first balance point junction, and the second terminal being connected to all of said second balance point junctions, each of said input and output junctions of each bilateral current gate means being connected to a normally-open switch means;
B. floating bias means for producing a bias current; and
C. selection means connected to said floating bias means and all of said switch means for selectively closing a pair of said switch means to enable bias current from said floating bias means to flow through one of said bilateral current gate means, thereby enabling a signal input on the first terminal associated with said bilateral current gate means to be coupled to the second terminal.

4,437,097

BUOYANT ELECTRODE

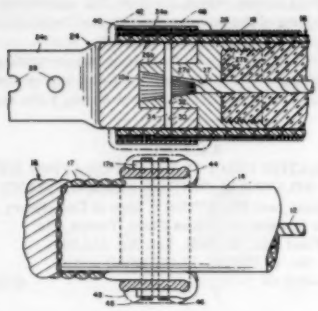
John A. Hudson, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 25, 1982, Ser. No. 342,251
Int. Cl.³ B63B *21/56*; H01B *7/12*
U.S. Cl. 340—852 **7 Claims**

1. A buoyant electrode of the type comprising a buoyant core, includng a central strength member surrounded by cellular plastic flotation material, a conductive layer of helically laid strands of wire formed around said core, and a forward end connection for towing said electrode and for electrically

energizing said conductive layer, said electrode being characterized by the improvement comprising:

said wire strands being formed of hard drawn aluminum; and



annular clamping means for fixing together the aft ends of said wire strands for combined rotational and sliding movement of said aft ends relative to said core.

4,437,098

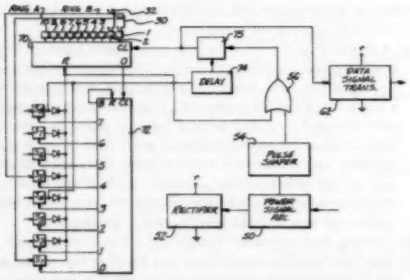
APPARATUS FOR ELECTRONICALLY READING MECHANICAL METERS HAVING NON-SIMULTANEOUSLY CHANGING DIGITS

Shlomo Rosinek, Kiron; Isaac Rinkewich, Tel-Aviv, and Boris Khurgin, Haifa, all of Israel, assignors to Matam, Ltd., Tel-Aviv, Israel

Filed Oct. 26, 1981, Ser. No. 315,148

Int. Cl.³ G08C *19/00, 19/36, 19/16*

U.S. Cl. 340—870.02 **16 Claims**



1. Apparatus for detecting the position of first and second members, each of which is movable to one of a given number of positions, said apparatus comprising, for each member, first means effective when actuated to sense the position of said member; second means effective, when actuated, to sense the position of said member, said first and second sensing means being spaced apart, along the direction of movement of said member, by a distance less than the distance between adjacent positions of said member; means for actuating each of said first sensing means, in sequence, means for actuating each of said second sensing means, in sequence, a given time after actuation of said first sensing means, said given time being greater than the time it takes for both members to move between adjacent positions; first means for storing a first number representative of the respective positions sensed by each of said first sensing means; second means for storing a second number representative of the respective positions sensed by each of said second sensing means; and means for comparing said stored numbers and for selecting one of said stored numbers.

4,437,099

POLARIZATION CONVERTER FOR ELECTROMAGNETIC WAVES

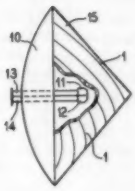
Erich Kandler, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 20, 1981, Ser. No. 246,122

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1980, 3023561

Int. Cl.³ H01Q *15/24*

U.S. Cl. 343—756 **10 Claims**



1. The method of forming a non-planar polarization grid structure comprising, forming conductive lines on a disc of planar insulation material, removing a pie-shaped portion of said disc, and joining the edges of said disc where the pie-shaped portion was removed to form a cone and the pattern of said conductive lines as viewed from the apex of the cone having the desired shape to obtain circular polarization.

4,437,100

INK-JET HEAD AND METHOD FOR PRODUCTION THEREOF

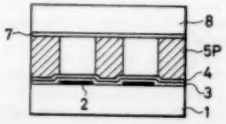
Hiroshi Sugitani, Machida; Hiroto Matsuda, Yokohama, and Masami Ikeda, Chiba, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1982, Ser. No. 385,092

Claims priority, application Japan, Jun. 18, 1981, 56-94884; Jun. 24, 1981, 56-97923; Jun. 24, 1981, 56-97924; Jun. 24, 1981, 56-97925

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—1.1 **16 Claims**

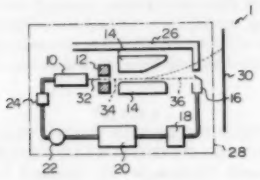


1. An ink-jet head comprising an ink flow path constituted of a hardened film of a photosensitive resin composition provided on the surface of a substrate, characterized in that a binding auxiliary layer is interposed between the substrate surface and the hardened film.

4,437,101
INK JET PRINTING APPARATUS

Yutaka Ebi; Takao Fukazawa; Toshio Kawakubo; Koichiro Jinnai; Masanori Horike; Kyuhachiro Iwasaki; Chuji Ishikawa, and Toshitaka Hirata, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 3, 1982, Ser. No. 374,652
Claims priority, application Japan, May 11, 1981, 56-70526; May 11, 1981, 56-70527; May 11, 1981, 56-70528; May 11, 1981, 56-70529
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 32 Claims

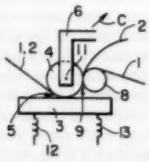


1. An ink jet printing apparatus comprising:
an ink ejection head for ejecting a jet of ink;
charging electrode means for electrostatically and selectively charging ink droplets separated from the ink jet;
deflection electrode means for electrostatically deflecting the charged ink jet;
a carriage for mounting thereon the ink ejection head, the charging means and the deflection means and moving reciprocatingly along a sheet of paper; and
a means for subjecting the charged ink droplets to an electric field which is asymmetrical with respect to a predetermined deflection plane in which the charged ink droplets coming out from the charging electrode means are to be deflected;
the asymmetrical electric field applying means being disposed between the charging electrode means and the deflection electrode means.

4,437,102
HEAT-SENSITIVE RECORDING APPARATUS

Toshiharu Inui, and Haruhiko Moriguchi, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1981, Ser. No. 320,037
Claims priority, application Japan, Nov. 17, 1980, 55-160798
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH 3 Claims



1. A heat sensitive recording apparatus, comprising:
a thermal head assembly for selectively causing heat generating elements to generate heat according to image data;
a back roll for maintaining pressure against said thermal head assembly to sandwich a thermally sensitive recording medium and a printing sheet therebetween;
a rotatable back roll mounting arm for mounting said back roll thereon, a position of said back roll being substantially fixed by said back roll mounting arm during a recording operation;
at least one adjustable spring urging said thermal head assembly toward said back roll with an adjustable force;
said thermal head assembly including a first surface for contacting said recording medium and a second surface opposite said first surface, said spring exerting a force against said second surface and toward said back roll; and
a drive roller contacting said back roll at a position downstream of a position where said recording medium and said printing sheet are sandwiched between said thermal head assembly and said back roll to drive said back roll during a recording operation.

4,437,103
INK-JET NOZZLE AND A METHOD FOR MANUFACTURING SAME

Kunio Ikeda, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Japan

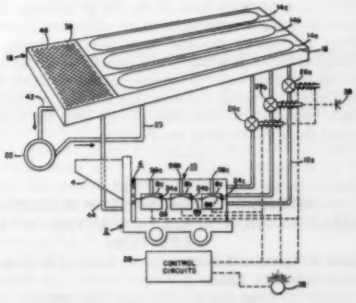
Filed Jan. 18, 1982, Ser. No. 340,229
Claims priority, application Japan, Jan. 16, 1981, 56-3728
Int. Cl.³ G01D *15/18*; B21D *53/00*
U.S. Cl. 346—140 R 8 Claims

1. An ink-jet nozzle for use in an ink-jet printer, said nozzle being generally in the shape of a disc provided with a throughhole at its center as an ink passage, said nozzle comprising an inner annular portion having a first hardness and an outer annular portion contiguous to and integral with said inner annular portion and having a second hardness, said first hardness being substantially larger than said second hardness, said inner and outer annular portions being comprised of an electrodeposited material.

4,437,104
INK DISPOSAL SYSTEM FOR INK JET PRINTER

David M. Hudson, Chelmsford, Mass., assignor to Advanced Color Technology, Inc., Chelmsford, Mass.

Filed May 10, 1982, Ser. No. 376,780
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R 1 Claim



1. In an ink jet printer having a printing head and a movable carriage carrying said printing head, an ink supply and disposal system comprising
a disposable primary ink cartridge having an enclosed ink supply chamber and a closed waste-ink storage chamber separate from said ink supply chamber,
a flexible ink reservoir enclosed in said chamber,

a secondary ink container on said carriage having therein an ink-receiving reservoir,

means including a flexible ink-supply conduit for transferring ink from said ink reservoir of said primary ink cartridge to said ink-receiving reservoir of said secondary ink container,

collection means on said carriage for gathering waste ink from said head,

flexible waste-ink duct means extending between said collection means and said storage chamber,

a pump having an air inlet and an air outlet,

a first conduit connected between said air outlet and said supply chamber operative to maintain said supply chamber under continuous gaseous pressure,

a second conduit connected between said air inlet and said waste ink storage chamber thereby to maintain said storage chamber under reduced pressure, and

ink-absorbing material positioned within said waste ink storage chamber.

4,437,105

CASSETTE COMPRISING A CAPPING DEVICE AND/OR A CLEANING DEVICE FOR A PRINTING HEAD OF AN INK JET PRINTER

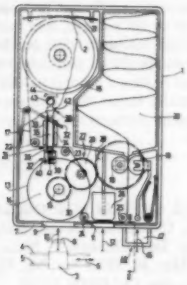
Gustav Mrazek, and Franz Obenaus, both of Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 2, 1982, Ser. No. 394,738

Claims priority, application Austria, Jul. 24, 1981, 3283/81

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **9 Claims**



1. A cassette comprising a capping device for the capping and/or a cleaning device for the cleaning of the jet nozzle surface of a printing head of an ink jet printer, the capping device defining a capping position while the cleaning device defines a cleaning position, said positions being accessible through at least one window in a cassette wall, characterized in that the cassette wall (**7**) comprising the window (**9**, **11**) also comprises a purging position (**45**) for the printing head (**3**) which comprises a collecting device (**46**) for collecting ink ejected from the printing head.

4,437,106

METHOD AND MEANS FOR REDUCING ILLUMINATION NULLS IN ELECTRO-OPTIC LINE PRINTERS

Robert A. Sprague, Saratoga, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 8, 1981, Ser. No. 299,697

Int. Cl.³ G01D *15/14;* **G02F** *1/01*

U.S. Cl. 346—160 **9 Claims**

1. In an electro-optic line printer having a recording medium; a multigate light valve for printing picture elements in spatially predetermined positions along a printing axis; coherant imaging means optically aligned between said light valve and said recording medium, said imaging means including lens means for imaging said light valve onto said recording medium; and means for advancing said recording medium in a cross line direction relative to said light valve; the improvement comprising

additional means within said imaging means for coupling light from illuminated picture elements into areas on said recording medium surrounding the predetermined positions for said illuminated picture elements, thereby reducing illumination nulls between said picture elements.

4,437,107

SELF-IGNITING THYRISTOR WITH A PLURALITY OF DISCRETE, FIELD CONTROLLED ZENER DIODES

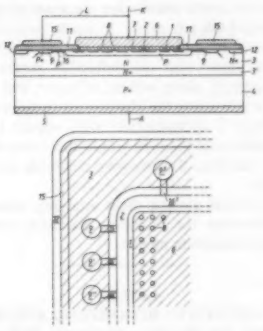
Per-Erik Jonsson, Bromma, and Per Svedberg, Vällingby, both of Sweden, assignors to ASEA Aktiebolag, Vasteras, Sweden

Filed Sep. 28, 1981, Ser. No. 306,255

Claims priority, application Sweden, Oct. 8, 1980, 8007036

Int. Cl.³ H01L *29/74, 29/90, 29/02, 29/40*

U.S. Cl. 357—38 **4 Claims**



1. In a self-ignitable thyristor having a zener diode integral with the thyristor, which zener diode bridges the junction of the thyristor across which the off-state voltage appears and determines the breakover voltage of the thyristor, one emitter layer of the thyristor being located at one main surface of the semiconductor body which forms the thyristor, with the zener diode arranged adjacent to the same main surface and to the emitter layer of the thryistor, the zener diode having a breakdown voltage influenced by the field geometry at a portion of the PN junction of the zener diode located adjacent to said main surface, the improvement comprising:

a plurality of zener diodes in the semiconductor body laterally separated from each other and from the base layer adjacent said one emitter layer, each of said zener diodes being connected via resistive means to said base layer of said thyristor,

an electrically conducting screen means located over said main surface of the thyristor to overlie said portion of the PN junction of each of the zener diodes for influencing the field geometry at said portion of the PN junction, thereby influencing the breakover voltage of the thyristor,

said screen means being electrically connected to the main electrode contacting said one emitter layer so as to have substantially the same potential as said main electrode, and

an electrically insulating portion located between the screen

means and the main surface at least over said portions of the PN junctions.

4,437,108

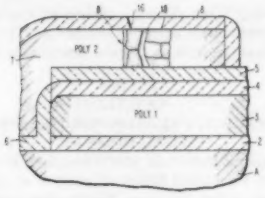
DOUBLE POLYSILICON CONTACT STRUCTURE

James R. Gardiner, Wappingers Falls; Stanley R. Makarewicz, New Windsor; Martin Revitz, Poughkeepsie, and Joseph F. Shepard, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 164,647, Jun. 30, 1980. This application Dec. 20, 1982, Ser. No. 450,856

Int. Cl.³ H01L *29/04, 29/34, 23/48, 29/46*

U.S. Cl. 357—59 **1 Claim**



1. An improved double polysilicon contact structure for a semiconductor device including at least two overlying polysilicon conductors comprising:

A. a semiconductor substrate A,

B. a first silicon dioxide insulating layer **2** united to the substrate,

C. a first conductive polysilicon layer **3** patterned on the first insulating layer **2**,

D. a first silicon dioxide dielectric layer **4** patterned on the first conductive polysilicon layer **3**,

E. a second dielectric layer **5** patterned on the first dielectric layer **4** as an etch barrier to selected etchants, said second dielectric layer being selected from the group consisting of silicon nitride and aluminum oxide,

F. a second conductive polysilicon layer **7** superimposed, in part at least, on the first conductive polysilicon layer **3**, said second conductive polysilicon layer enclosed by a third dielectric layer **8**, and

G. an electrically conductive contact **12'** connected to the second conductive polysilicon layer **7** wherein said second dielectric layer **5** is patterned on said first conductive polysilicon layer **3** to underlie the contact **12'** established to the second conductive polysilicon layer **7**, whereby any polysilicon voids existing in the second conductive polysilicon layer do not electrically short the second conductive polysilicon layers to the first conductive polysilicon layer.

4,437,109

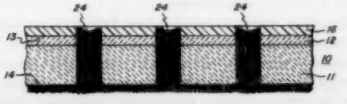
SILICON-ON-SAPPHIRE BODY WITH CONDUCTIVE PATHS THEREETHROUGH

Thomas R. Anthony, Schenectady; Richard J. Connery, Liverpool, both of N.Y., and David F. Hoeschele, Jr., Boyertown, Pa., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 7, 1980, Ser. No. 204,957

Int. Cl.³ H01L *29/06, 23/48*

U.S. Cl. 357—68 **10 Claims**



1. An article of manufacture comprising:

(a) a body of layered silicon-on-sapphire having

(i) top and bottom major opposed surfaces substantially parallel to each other, and

(ii) an outer peripheral edge area of silicon and sapphire interconnecting said major surfaces, said top major surface being silicon and said bottom major surface being sapphire; and

(b) a plurality of electrically conducting paths interconnecting said major surfaces, each of said paths comprising a hole substantially filled with an electrically conducting mass of unified particles, each hole having a generally circular entrance aperture about 4 mils or less in diameter and a generally circular exit aperture at opposite ends thereof, said entrance aperture lying in the plane of one of said major surfaces and having a first diameter, said exit aperture lying in the plane of the opposite major surface and having a second diameter substantially equal to or less than said first diameter and said hole having an aspect ratio in the range of from about 2.17:1 to about 25.59:1, each path having an axis, said axis being substantially perpendicular to the planes of said major surfaces with the centers of said entrance and said exit apertures being substantially colinear therewith, and said paths being arranged in a substantially periodic array, said array having a center line-to-center line spacing substantially equal to twice said first diameter.

4,437,110

CONVERGENCE DEVICE FOR A COLOR-CAMERA

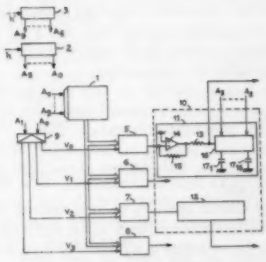
Roger Hunaut, and Francois Dupont, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 20, 1982, Ser. No. 341,179

Claims priority, application France, Jan. 23, 1981, 81 01287

Int. Cl.³ H04N *5/26, 9/28*

U.S. Cl. 358—41 **7 Claims**



1. A convergence device for a color camera having a screen divided into L groups of M lines each and N columns thereby forming LN rectangles, and horizontal and vertical scanning means adapted to each of the three fundamental colors, said convergence device comprising

correction memory means storing 4LN words of "x" bits for associating, with each of the "LN" rectangles of the screen of the camera, a predetermined horizontal scanning correction signal and a predetermined vertical scanning correction signal adapted to each of two of the three fundamental colors,

means for applying said scanning correction signals to said horizontal and vertical scanning means,

sequencer means coupled to said means for applying for controlling the application of said correction signals to said horizontal and vertical scanning means adapted to said two fundamental colors, and

attenuation means coupled to said means for applying and said scanning means for attenuating discontinuities existing between horizontal and vertical scanning correction signals associated with adjacent lines of the same column.

4,437,111

COLOR TELEVISION CAMERA

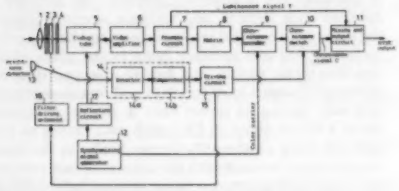
Takayoshi Inai, Takamatsu; Teruo Saitoh, Saijo, and Hisayuki Sannomiya, Kagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 6, 1982, Ser. No. 337,364

Claims priority, application Japan, Jan. 16, 1981, 56-5264; Jan. 16, 1981, 56-5265

Int. Cl.³ H04N 3/06

U.S. Cl. 358—44 5 Claims



1. A color television camera comprising:

a pickup device having sensitivity in the visible light range and at least a part of the infrared range,

an automatically detachable infrared-cut filter means disposed in a light path which is leading to said pickup device,

a brightness detection means disposed nearer to an object than said infrared-cut filter so as to detect brightness change of the light coming into said light path for issuing an output signal which varies between a first state when brightness is over a predetermined level and a second state when brightness is below the predetermined level,

a driving circuit part including a detector for detecting the output signal of said brightness detection means and a comparator for comparing a detected output signal of said detector with a predetermined level, and a driving circuit part for issuing a control signal responding to the result of the comparing by the comparator,

filter driving means coupled to said driving circuit and controlled based on said control signal for driving said automatically detachable infrared-cut filter to be inserted into said light path leading to said pickup device at said first state and driving the same out of said light path at said second state, and

a video signal circuit coupled to said driving circuit and controlled based on said control signal including a switching means to be switched in a manner to constitute a color video signal producing circuit at said first state and a monochrome video signal producing circuit at said second state.

4,437,112

SOLID-STATE COLOR IMAGING APPARATUS

Nobuyoshi Tanaka; Seiji Hashimoto, and Tetsuro Kuwayama, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 10, 1981, Ser. No. 233,096

Claims priority, application Japan, Feb. 15, 1980, 55-17968; Apr. 18, 1980, 55-51224; Apr. 21, 1980, 55-53302; Apr. 21, 1980, 55-53309

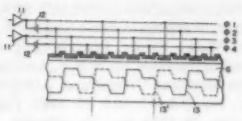
Int. Cl.³ H04N 9/07

U.S. Cl. 358—44 24 Claims

1. A color imaging apparatus comprising:

a plurality of imaging cells which function as picture elements for forming an image signal;

a plurality of potential wells formed in each imaging cell; and



a filter having filter elements positioned corresponding to each potential well in such a manner as to provide different spectral sensitivities to each potential well.

4,437,113

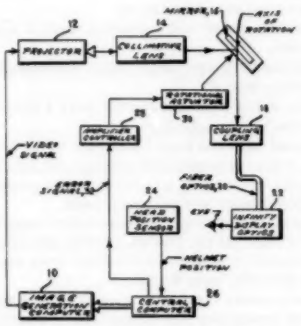
ANTI-FLUTTER APPARATUS FOR HEAD MOUNTED VISUAL DISPLAY

David R. Lee, and Robert B. McCreary, both of Mesa, Ariz., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 21, 1981, Ser. No. 332,894

Int. Cl.³ H04N 5/74

U.S. Cl. 358—93 5 Claims



1. An anti-flutter apparatus for a head mounted visual display comprising in combination:

an image generation means for generating and projecting a visual image,

a collimating means to receive said visual image from said image generation means and to collimate said visual image,

a reflecting means to directly receive said visual image from said collimating means, said reflecting means is centered about its axis of rotation to reflect said visual image therefrom,

a light transmission means to receive said visual image from said reflecting means,

a display means which is directly connected to said light transmission means to receive said visual image from said light transmission means, said display means displaying said visual image to provide a scene,

a position sensor means to generate a first position signal, and a second position signal,

a computing means to receive said first position signal, said computing means generating an image signal in response to said position signal, said image signal being sent to said image generation means, said computing means generating an image position signal, said computing means subtracting said image position signal from said second position signal to generate an error signal,

an amplifier/controller means receiving said error signal and generating a correction signal in response thereto, and,

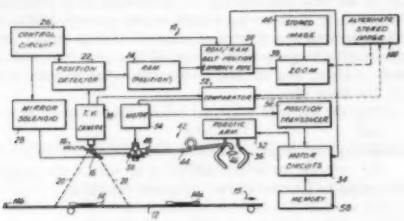
an actuator means operationally connected to said reflecting means, said actuator means receiving said correction signal, said actuator means rotating said reflecting means about its center of rotation in response to said correction signal.

4,437,114

ROBOTIC VISION SYSTEM

Joseph A. LaRussa, Yorktown Heights, N.Y., assignor to Farrand Optical Co., Inc., Valhalla, N.Y.

Filed Jun. 7, 1982, Ser. No. 385,465
Int. Cl.³ H04N 7/18
U.S. Cl. 358—101 **7 Claims**



1. A robotic system for grasping a randomly oriented object, comprising:

(a) grasping means for grasping said object;

(b) motor means for placing said grasping means at a desired position and causing said grasping means to perform a gripping function;

(c) camera means for forming a first image of said object;

(d) an optional train for conveying an image from a predetermined point to said camera means, said predetermined point being fixed relative to said grasping means;

(e) image means for containing a second image of said object to be grasped;

(f) comparison means responsive to said first and second images for comparing said first image to said second image;

(g) first coupling means for coupling said image means to said comparison means;

(h) second coupling means for coupling the output of said camera means to said comparison means;

(i) image rotation means for causing rotation of said second image with respect to the image produced by said camera means, said comparison means being responsive to said first and second coupling means to stop rotation of said image rotation means when a coincidence in angular position is detected between said second image and the image produced by said camera means; and

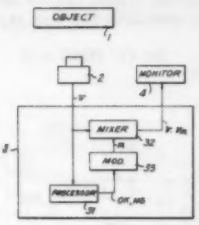
(j) angular orientation means for generating an angular orientation signal in respone to a detection of coincidence between said second image and said image produced by said camera means to generate an orientation signal indicating the orientation of said object and providing said orientation signal to said motor means to angularly orient said grasping means with said object to be grasped.

4,437,115

OBJECT AND INSPECTION SYSTEM

Hajime Yoshida, Tokyo, Japan, assignor to Hajime Industries Ltd., Japan

Continuation-in-part of Ser. No. 112,839, Jan. 17, 1980, abandoned. This application Jul. 8, 1982, Ser. No. 396,166
Claims priority, application Japan, Jan. 25, 1979, 54-7930
Int. Cl.³ H04N 7/18
U.S. Cl. 358—106 **4 Claims**



1. An object inspection system for sensing and indicating defects in an object, comprising:

an image sensing device effective to produce a video signal representing said object;

a monitor television receiver for reproducing an image from said video signal;

a processor including at least one of a differentiation circuit and a level comparator, said differentiation circuit being effective to produce an output having a characteristic related to a change in said video signal, said level comparator including means signal effective for producing a first signal when said characteristic represents a good portion of said object and a second signal when said characteristic represents a not good portion of said object;

a modulator responsive only to said second signal to produce a modulated signal; and

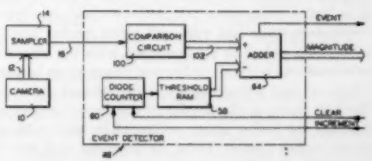
a signal mixer effective to mix said video signal with said modulated signal and to cause blinking in portions of said image corresponding to said not good portions of said object whereby said not good portions of said object are clearly determined by said blinking portions of said image.

4,437,116

METHOD AND APPARATUS FOR COMPARING DATA SIGNALS IN A CONTAINER INSPECTION DEVICE

John W. Juvinall, Ottawa Lake, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 22, 1980, Ser. No. 218,996
Int. Cl.³ H04N 7/18
U.S. Cl. 358—106 **15 Claims**



1. In an apparatus for detecting defects in an object including a camera for generating a series of video signals each having a magnitude proportional to an amount of light received from a particular point of inspection on the object, a circuit for generating a comparison signal representing a magnitude difference between two of the video signals, said circuit comprising; means responsive to the two video signals for generating a comparison signal having a magnitude representing a ratio of the one of the two video signals having the smaller magnitude

to the other one of the two video signals having the larger magnitude.

4,437,117

X-RAY TELEVISION INSTALLATION FOR MONITOR PHOTOGRAPHY

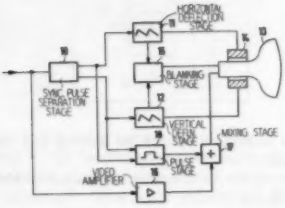
Joerg Haendle, and Heinz Horbaschek, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 7, 1981, Ser. No. 309,188

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1980, 3039708

Int. Cl.³ H04N 5/32

U.S. Cl. 358—111 **2 Claims**



1. An x-ray television installation for monitor photography, comprising an x-ray tube having a ray path along which x-ray energy is directed for producing an x-ray image, an x-ray image intensifier arranged in said ray path of said x-ray tube and having an output fluorescent screen for supplying an intensified optical image in accordance with an incident x-ray image, a video camera optically coupled with said output fluorescent screen of said x-ray image intensifier for generating a video signal in accordance with the optical image supplied thereby, a video monitor comprising a video display unit having an image display screen for displaying the video signal as a visible image, a video amplifier connecting said video camera with said video display unit so as to supply an amplified video signal to the video display unit for display thereby, a synchronizing pulse separation stage being connected with the video camera for supplying a synchronizing pulse signal synchronized with the video signal, a horizontal deflection stage and a vertical deflection stage connected between said separation stage and said video display unit for controlling the display of the video signal thereby, a blanking stage synchronized with said horizontal deflection stage and said vertical deflection stage and controlling blanking of the video display unit at horizontal and vertical retrace intervals during the display of the video signal, and a photographic camera optically coupled with the image display screen of the video display unit for photographing the display of the video signal thereon, characterized in that a pulse stage coupled with said synchronizing pulse separation stage and with said video display unit generates unblanking pulses in synchronism with the operation of the horizontal and vertical deflection stages so as to generate visible bars on said image display screen of said video display unit, the bars being at the border of the image display screen for bounding the visible image produced by said video signal, the photographic camera being so designed that the visible images produced on the video display unit are photographed adjacent one another with the bars eliminating unexposed interstices between adjacent photographed images, and characterized in that mixing means is connected with the pulse stage and the video amplifier, and supplies an output signal to the video display unit, and that the deflection stages provide sawtooth voltages having active sweep portions which are substantially longer in duration than the duration of the active sweep intervals of the video camera such that the visible bars generated on the image display screen during such active sweep portions are included on the image display screen without loss of the image contents of said video signal.

4,437,118

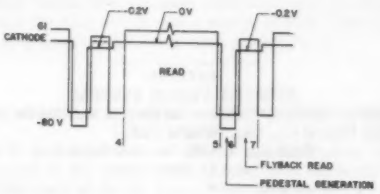
PYROELECTRIC VIDICON WITH IMPROVED SIGNAL-TO-NOISE RATIO

Barry M. Singer, New York, N.Y., assignor to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 14,665, Feb. 23, 1979, abandoned, which is a continuation of Ser. No. 825,577, Aug. 18, 1977, abandoned. This application Aug. 5, 1980, Ser. No. 175,477

Int. Cl.³ H04N 5/33

U.S. Cl. 358—113 **2 Claims**



2. A method of reducing pedestal noise in a pyroelectric vidicon of the type having a cathode and a target, said cathode being operated at a reference potential during image readout such that the target potential is equal to a quiescent value after image readout, said method comprising, after pedestal generation, the steps of:

setting the cathode potential below the reference potential; and

scanning the target with an electron beam emanating from the cathode for a time sufficient to reduce the target potential to a value above the quiescent value.

4,437,119

INTER-FRAME ADAPTIVE PREDICTION SYSTEM FOR TELEVISION SIGNALS

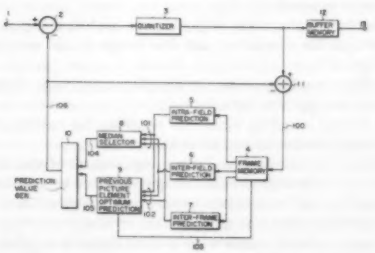
Shuichi Matsumoto, Tokyo; Yoshinori Hatori, Kawasaki; Hitomi Murakami, Yokohama, and Hideo Yamamoto, Sagamihara, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 9, 1982, Ser. No. 386,575

Claims priority, application Japan, Jun. 19, 1981, 56-94004

Int. Cl.³ H04N 7/12

U.S. Cl. 358—136 **1 Claim**



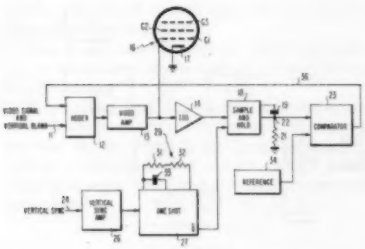
1. An inter-frame adaptive prediction system for television signals comprising: input terminal means for receiving an input television signal; memory means having a capacity large enough to store the input television signal of at least one frame at all times; intra-field prediction means for generating a prediction value X_{IN} of the latest input picture element, through using a picture element value in the same field as the latest input picture element, read out from the memory means when

a value X_1 of the latest input picture element of the television signal is received; inter-field prediction means for generating a prediction value X_{1K} of the latest input picture element, through using picture elements in the same field as the latest input picture element and an immediately preceding field, read out from the memory means when the value X_1 of the latest input picture element is received; inter-frame prediction means for generating a prediction value X_{1F} of the latest input picture element, through using picture elements in the same field as the latest input picture element, the immediately preceding field and an immediately preceding frame, read out from the memory means when the value X_1 of the latest input picture element is received; median selector means for comparing the prediction values in terms of magnitude to select a prediction value X_{1M} assuming a median; previous picture element optimum prediction means for comparing absolute values, $|X_{0N}-X_0|$, $|X_{0K}-X_0|$ and $|X_{0F}-X_0|$, of prediction errors between the prediction values X_{0N}, X_{0K} and X_{0F} obtained from the intra-field prediction means, the inter-field prediction means and the inter-frame prediction means for a picture element value X_0 immediately before the latest input picture element X_1 and the picture element value X_0 to select the prediction means providing the smallest value, and for generating a prediction value X_{1S} of the latest input picture element value X_1 available from the selected prediction means; and prediction generator means for newly generating a prediction value X_1 of the latest input picture element X_1 on the basis of a weighted mean of the prediction value X_{1M} obtained from the median selector means and the prediction value X_{1S} obtained from the optimum prediction means for the latest picture element value X_1.

4,437,120
DRIVE LEVEL CONTROL SYSTEM FOR TESTING KINESCOPES

Felta C. Farmer, Jr., Gas City, and Donald P. Knight, Marion, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 5, 1982, Ser. No. 346,372
Int. Cl.³ H04N 7/02
U.S. Cl. 358—139 **6 Claims**



1. A drive level control for testing a kinescope having an element driven by a drive voltage and in which electron beams are scanned in accordance with vertical synchronizing pulses and vertical blanking pulses comprising:

first means for receiving said vertical blanking pulses and for applying said vertical blanking pulses to said element;

second means for receiving said vertical blanking pulses and converting said pulses to a voltage proportional to the level of said vertical blanking pulses;

third means responsive to said vertical synchronizing pulses for gating said second means in accordance with the initial transition of said synchronizing pulses;

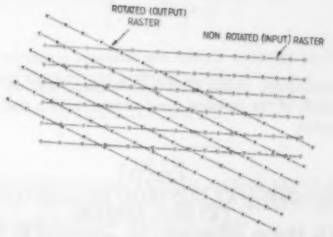
fourth means for providing a reference drive level;

fifth means responsive to said reference level and to said proportional voltage for providing an error signal, said first means being responsive to said error signal for maintaining said drive voltage at a constant level.

4,437,121
VIDEO PICTURE PROCESSING APPARATUS AND METHOD

Richard J. Taylor, London; Paul R. N. Kellar, Newbury, and Neil R. Hinson, Petersfield, all of England, assignors to Micro Consultants Limited, Berkshire, England

Continuation of Ser. No. 246,970, Mar. 24, 1981, abandoned.
This application Jun. 6, 1983, Ser. No. 499,676
Claims priority, application United Kingdom, Apr. 10, 1980, 8011834
Int. Cl.³ H04N 5/22
U.S. Cl. 358—160 **23 Claims**



1. A processing system for processing input television signals to produce output television signals representing the same picture as the input signals but with an orientation change imparted to at least part of said picture, comprising:

storage means having relatively slow read rates for storing elements of said input television signals representing individual picture points;

address means for sequentially reading from said storage means successive batches of said input signal elements representing picture points included in respective two-dimensional areas of the picture, each said area of the picture having a horizontal dimension comprising a plurality of picture points and a vertical dimension comprising a plurality of lines of the input signal raster;

latch means having a relatively rapid read rate for temporarily storing each batch of selected signal elements;

processing means for reading signal elements from said latch means and for interpolating among said signal elements to synthesise at least one signal element for the output television signals from each batch of input signal elements; and

means for producing said synthesised signal elements in the appropriate order in relation to the output signal raster to produce the desired change in the television picture.

4,437,122
LOW RESOLUTION RASTER IMAGES

Brian F. Walsh, Etna, and David E. Halpert, Enfield, both of N.H., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 12, 1981, Ser. No. 303,742
Int. Cl.³ H04N 1/38, 5/14
U.S. Cl. 358—166 **27 Claims**

1. A method of enhancing the reproduction of images represented by a plurality of pixels comprising the steps of

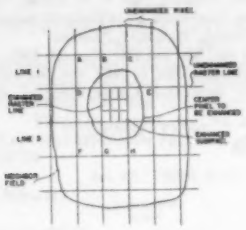
holding in a first storage consecutive lines of an image to be reproduced, the pixels of the image being represented by digital signals,

isolating a predetermined portion of the signals of each of the image lines into a second storage means,

forming a pixel pattern from the isolated digital signals including a center pixel signal surrounded by neighboring pixel signals including pixel signals from the same line of the image as the center pixel as well as pixel signals from the lines above and below the center pixel,

generating an identifier uniquely describing the isolated pixel pattern,

comparing the identifier with identifiers representing a plurality of standard pixel formats, and



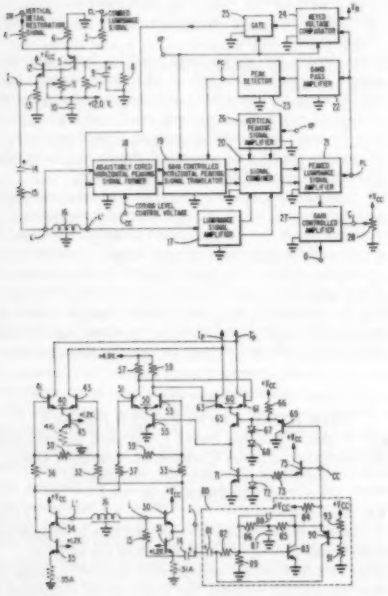
enhancing the central pixel in accordance with the particular match of the isolated pixel pattern with a standard pixel format.

4,437,123

DYNAMICALLY CONTROLLED HORIZONTAL PEAKING SYSTEM

Wayne E. Harlan, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 30, 1982, Ser. No. 373,531
Int. Cl.³ H04N *5/14, 5/21*
U.S. Cl. 358—166 **5 Claims**



1. In a television receiver including a source of video signals which are representative of variations of the luminance of an image between black and white extremes during periodic image intervals, and which include, during intervening blanking intervals, deflection synchronizing pulses extending to peaks at a blacker-than-black level, said video signals occupying a predetermined band of frequencies; a dynamically controlled horizontal peaking system comprising:

a peaking system input terminal;

means, coupled to said source, for delivering said video signals to said peaking system input terminal;

means, responsive to said delivered video signals, for forming an adjustably cored horizontal peaking signal output, said forming means having a coring level control terminal, with the depth of coring of said horizontal peaking signal output effected by said forming means being dependent upon the level of a potential appearing at said control terminal;

signal translating means having an input terminal and an output terminal, and exhibiting a low pass characteristic having a cutoff frequency lying below the middle of said band of frequencies;

a direct current conductive coupling between said output terminal and said control terminal;

a capacitor coupled between said input terminal of said signal translating means and said peaking system input terminal;

means for developing a reference potential at a reference terminal;

a transistor having a base electrode direct current conductively coupled to said reference terminal, an emitter electrode direct current conductively coupled to said output terminal of said signal translating means, and a collector electrode direct current conductively coupled to said input terminal of said signal translating means; and

a signal combiner, responsive to said delivered video signals and to said adjustably cored horizontal peaking signal output, for developing peaked luminance representative signals;

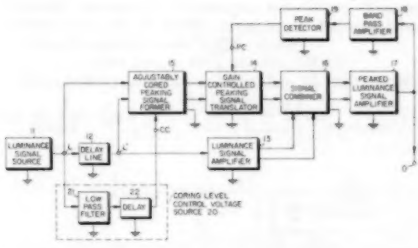
wherein said signal translating means provides a filtered version of said video signals at said output terminal with a polarity such that said synchronizing pulses extend in a conduction-enhancing direction for said transistor.

4,437,124

DYNAMIC CORING CIRCUIT

Larry A. Cochran, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 30, 1982, Ser. No. 373,750
Int. Cl.³ H04N *5/14*
U.S. Cl. 358—166 **3 Claims**



1. In an image reproduction system including a source of luminance signals representative of variations of the luminance of an image between black and white extremes; a dynamic coring circuit comprising:

means, coupled to said source, for developing a cored version of a signal representative of the high frequency content of said luminance signals, said cored version corresponding to the difference between a linearly translated version of said high frequency content representative signal and a doubly clipped version of said high frequency content representative signal; said developing means having a coring level control voltage input terminal, with the depth of coring effected by said cored version developing means dependent upon the level of a coring level control voltage applied to said input terminal; and

means, responsive to said luminance signals, for developing said coring level control voltage; said control voltage developing means comprising a low pass filter coupled to

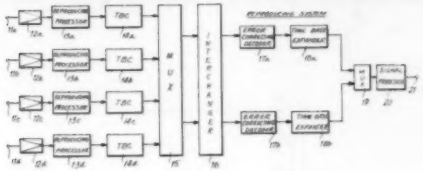
said source, and means for applying the output of said low pass filter to said input terminal with such a sense as to increase the depth of coring with a shift of said low pass filter output in the black direction and to decrease the depth of coring with a shift of said low pass filter output in the white direction.

4,437,125

DIGITAL SIGNAL PROCESSING METHOD AND APPARATUS

Kaichi Yamamoto, Zama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 27, 1981, Ser. No. 315,450
Claims priority, application Japan, Oct. 27, 1980, 55-150421
Int. Cl.³ H04N 5/785
U.S. Cl. 358—167 **14 Claims**



1. A method of assigning a control value having one of two complementary states to a transmitted digital signal arranged in blocks of digital data and having a control signal with one of two complementary states at a predetermined location in each such block to identify the respective block as being of an odd type or an even type, comprising

detecting errors occurring in said control signal;

sampling and storing the control signal, beginning at periodic times when said blocks are expected to change over from one of said odd and even types to the other thereof, for a plurality of said blocks where the control signal therein is detected to be free of errors;

judging whether there is a majority of blocks in which a sampled and stored control signal has one or the other of said complementary states;

providing as said control value an identifying signal whose state is determined by the state of the judged majority of the blocks; and

following a subsequent such periodic time and until a majority of blocks in which a sampled and stored control signal has one or the other of said complementary states is judged, providing as said control value a supplemental identifying signal based on a previously determined identifying signal.

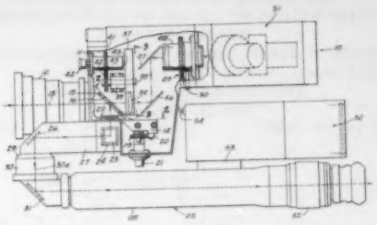
4,437,126

ELECTRONIC CINEMA CAMERA

Robert E. Gottschalk, Los Angeles, Calif., assignor to Panavision, Incorporated, Tarzana, Calif.

Filed Jul. 20, 1981, Ser. No. 285,157
Int. Cl.³ H04N 5/30
U.S. Cl. 358—224 **9 Claims**

1. A camera device for electronic cinematography comprising, in combination: a housing, an objective lens assembly supported on said housing and having an optical axis, a movable device having a mirror and a partial mirror and a transparent glass mounted thereon and positioned in substantially the same plane at an angle to said optical axis, means for moving said device in a direction at right angles to said optical axis to bring either of said mirrors or said transparent glass into alignment with said optical axis, a viewfinder eyepiece assembly pivotally mounted on said housing to turn about a horizontal axis, said assembly having elements positioned to receive light from either said mirror or said partial mirror, a fixed mirror in said housing positioned at an angle to said optical axis, a televi-



sion camera, and a movable iris device optically interposed between said fixed mirror and said television camera.

4,437,127

DOCUMENT INFORMATION FILING SYSTEM

Kenji Hirose, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 27, 1981, Ser. No. 315,656
Claims priority, application Japan, Oct. 31, 1980, 55-153274
Int. Cl.³ H04N 1/22
U.S. Cl. 358—296 **11 Claims**

1. A document information filing system comprising:

a scanner for scanning a document to produce a document information;

recording and reproducing means for recording and reproducing document information and title information corresponding to the document information in and from a recording medium;

means for providing title information concerning document information to be newly recorded in said recording medium;

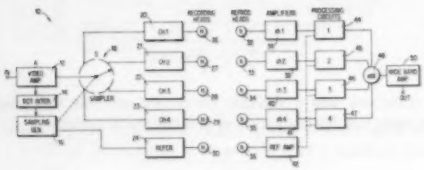
a storage section for storing various management information for predetermined fields; and

deciding means for executing an auxiliary decision as to if the title information reproduced by said recording and reproducing means corresponds to a title information in the various management information in said storage section, a first decision as to if the title information provided by said coupling means corresponds to a title information in any of the various management information in said memory section and a second decision as to if particular information of the title information reproduced by said recording and reproducing means coincides with particular information of the title information provided from said title information providing means and providing an instruction to inhibit the recording of document information when at least one of said auxiliary decision and said first decision is unsatisfied and/or said second decision is satisfied.

4,437,128
SYSTEM AND METHOD OF RECORDING AND REPRODUCING WIDE BAND CHANNEL INFORMATION BY MEANS OF SEVERAL NARROW BAND CHANNELS

Mechislao Sapkowski, Caracas, Venezuela, assignor to Manfred Fred Honeck, Novato, Calif., a part interest

Filed Dec. 2, 1980, Ser. No. 212,243
Int. Cl.³ H04N *5/76*
U.S. Cl. 358—335 **25 Claims**



1. A method of recording and reproducing wide band channel information signals by means of several narrow band channels, comprising the steps of:

receiving said wide band channel information signals;

sampling said received wide band channel information signals so as to derive a plurality of narrow band channel signals;

recording and reproducing said plurality of narrow band channel signals to obtain a corresponding plurality of reproduced narrow band channel signals;

shaping each of said plurality of reproduced narrow band channel signals to obtain corresponding shaped output signals; and

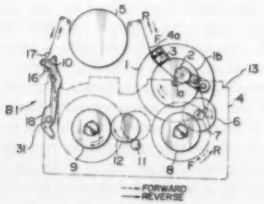
combining said corresponding shaped output signals so as to recover and reproduce said wide band channel information signals;

wherein said shaping step comprises limiting said plurality of reproduced narrow band channel signals to provide corresponding limiter outputs, discriminating said limiter outputs to provide discriminator outputs, and shaping and time-centering said discriminator outputs to obtain said corresponding shaped output signals.

4,437,129
MAGNETIC RECORDING AND REPRODUCING APPARATUS ENABLING TAPE TRANSPORT IN THE FORWARD AND REVERSE DIRECTIONS

Masashi Yoshida, Ibaraki; Hajime Yokota, Katsuta; Mitsuji Aman, Mito, and Tatsuya Shigemura, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 8, 1981, Ser. No. 281,400
Claims priority, application Japan, Jul. 9, 1980, 55-92780
Int. Cl.³ G11B *15/66*
U.S. Cl. 360—85 **4 Claims**

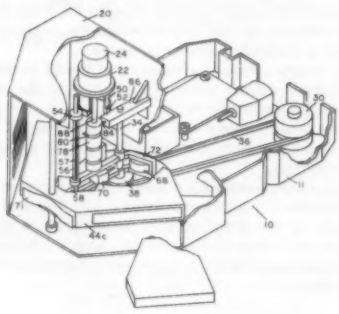


1. A magnetic recording and reproducing apparatus having an idler mechanism, for rotating a first and second reel mounts with a predetermined torque to pull out a magnetic tape extending between a first reel and a second reel into a predetermined tape path and take up a magnetic tape pinched and driven by a capstan and a pinch roller onto said first reel mount, first braking force applying means for applying a predetermined braking force to said second reel mount and a second braking force applying means for applying a predetermined braking force to said first reel mount, comprising a single electromagnet operatively coupled to said idler mechanism and said first and second braking force applying means such that when a plunger of said electromagnet is at a first position the drive of said reel mounts by said idler mechanism and the brake of said first braking force applying means are released while the brake to said first reel mount by said second braking force applying means is enabled, and when said plunger of said electromagnet is in a second position the drive of said reel mount by said idler mechanism and the brake by said first braking force applying means are enabled while the brake by said second braking force applying means is released.

4,437,130
CASSETTE ADAPTER FOR EIGHT TRACK MACHINES

John B. Hennessy, 1232 Albert Dr., Santa Rosa, Calif. 95405, and Derek Lane, 738 Dexter St., Santa Rosa, Calif. 95404

Filed Dec. 18, 1981, Ser. No. 332,082
Int. Cl.³ G11B *5/008*
U.S. Cl. 360—94 **6 Claims**



1. An adapter for an eight track stereo system comprising:

a body, including a flat transfer housing to be received in an eight track tape player, and a cassette housing;

at least two vertically aligned cassette receivers pivotally mounted in said cassette housing;

a transfer wheel in said transfer housing adapted to engage the conventional drive capstan of an eight track system;

an upright capstan in said cassette housing;

rotary motion transmitting means connecting said transfer wheel and said upright capstan;

a pick-up head carrier with at least one pick-up head thereon mounted for vertical movement in said cassette housing;

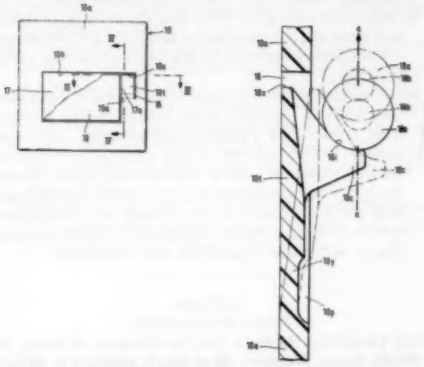
means for moving said carrier into alignment with a selected one of said cassette receivers; and

means for pivoting a selected one of said cassette receivers into operative association with said upright capstan and said pick-up head.

4,437,131
LOCKING DEVICE FOR THE TAPE CASSETTE COMPARTMENT OF A MAGNETIC TAPE APPARATUS

Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Dec. 23, 1981, Ser. No. 333,915
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048790
Int. Cl.³ G11B 1/00
U.S. Cl. 360—96.6 9 Claims



1. A locking device for the tape cassette compartment of a magnetic tape apparatus intended for storing and reproducing information, which cassette compartment is mounted on a chassis of the tape apparatus to be pivotable outwardly by the action of a preloaded spring, on a pivot axis which is parallel and proximate to a longitudinal side wall of the cassette compartment, the cassette compartment being arranged in the aperture of a flat front wall of the apparatus which is parallel to the chassis and has an outer surface in the same plane as the outer surface of the cassette compartment in its normal position, the chassis carrying a detent slide which is provided with a detent member and guided for straightline movements perpendicular to the pivot axis of the cassette compartment and parallel to the plane of the front wall, said detent member engaging a detent shoulder of the cassette compartment to maintain the later in its normal position, being disengageable from the detent shoulder through a release movement of the detent slide in opposition to the action of a detent return spring, the improvement therein comprising:

a detent release button defined by a portion of the front wall which is separated from the surrounding front wall along a major part of its circumference, the attached minor part of its circumference forming a bending hinge, so that a distal portion of the detent release button is depressible toward the inside of the apparatus; and

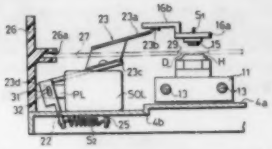
means defined by the depressible portion of the detent release button and the detent slide for driving the detent slide in a release movement, in response to a depression of the detent release button.

4,437,132
FLEXIBLE MAGNETIC DISK DEVICE

Motohiro Shimaoka, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1981, Ser. No. 308,895
Claims priority, application Japan, Oct. 7, 1980, 55-142220[U]
Int. Cl.³ G11B 5/48
U.S. Cl. 360—105 3 Claims

1. In a flexible magnetic disk device wherein a magnetic head and a loading pad opposing thereto are disposed on a carriage in a manner to hold therebetween a magnetic disk loaded rotatably and to be movable radially of the magnetic disk and wherein the loading pad has its operation cntrolled by a supporting arm which is turned by a solenoid a prescribed amount within a plane perpendicular to the surface of the magnetic disk;

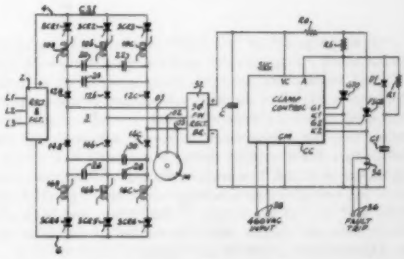


the improvement in that said solenoid is disposed with its axis being substantially parallel to the surface of said magnetic disk and that said supporting arm is juxtaposed to the disk surface along with said solenoid.

4,437,133
CURRENT SOURCE INVERTER COMMUTATION-SPIKE-VOLTAGE PROTECTION CIRCUIT INCLUDING OVER-CURRENT AND OVER-VOLTAGE PROTECTION

Barry J. Rueckert, New Berlin, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 24, 1982, Ser. No. 381,265
Int. Cl.³ H02H 7/09
U.S. Cl. 361—33 7 Claims



1. In an adjustable frequency A.C. motor control system having a solid state inverter supplied by adjustable D.C. voltage for applying adjustable frequency current to the A.C. motor input terminals and said inverter having low voltage power devices for switching the current into the motor phases and means for commutating the power devices in the proper order, and said switching causing large voltage transients or voltage spikes to be produced which would be impressed on the motor and which might damage the inverter power devices, the improvement comprising:

means for dissipating excess commutation energy so as to keep the voltage spikes at a controlled level comprising:

a spike voltage clamp circuit connected to said input terminals of the motor comprising:

resistor means for dissipating the commutation energy;

a turn-on turn-off switching device for connecting said resistor means in circuit so as to perform its energy dissipating function each time it is needed and for disconnecting said resistor means therefrom when it has performed its function;

voltage storage means for storing the voltage appearing at said input terminals;

decoupling means between said input terminals and said voltage storage means for decoupling said resistor means from said input terminals whenever the voltage on said

input terminals falls below the voltage on said storage means;

and clamp control means for sensing the voltage on said storage means and being responsive to a predetermined magnitude of voltage thereon for turning on said switching device to connect said resistor means in said circuit to limit said voltage and for turning off said switching device when said voltage has decreased to another predetermined value thereby to control said voltage spikes to a safe level.

4,437,134

DISCHARGE CIRCUIT FOR RAPIDLY ELIMINATING CHARGE TRAPPED IN A CAPACITOR VOLTAGE DIVIDER USED FOR MONITORING HIGH VOLTAGE AC

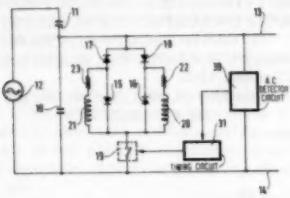
Jean-Pierre Dupraz, Aix-Les-Bains, France, assignor to Societe Anonyme dite: Alsthom-Atlantique, Paris, France

Filed Nov. 5, 1981, Ser. No. 318,535

Claims priority, application France, Nov. 6, 1980, 80 23700

Int. Cl.³ H02H *7/16*

U.S. Cl. 361—56 **4 Claims**



1. A discharge circuit for rapidly eliminating charge trapped in a capacitor voltage divider used for monitoring high voltage AC, said voltage divider comprising a capacitor column for dropping nearly all of the high voltage and a base capacitance connected in series therewith so that a small voltage appears thereacross, the improvement wherein said discharge circuit comprises a diode rectifier bridge comprising four diodes and connected by its AC terminals in parallel with the base capacitance, and two identical windings connected in parallel respectively with two of the diodes of the bridge, and both of said winding-shunted diodes being connected to the same one of the AC terminals of the diode bridge.

4,437,135

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

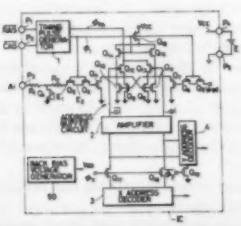
Masahiro Ogata, and Osamu Sakai, both of Kodaira, Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering, Ltd., both of Tokyo, Japan

Filed Nov. 6, 1981, Ser. No. 319,077

Claims priority, application Japan, Nov. 7, 1980, 55-155863

Int. Cl.³ H02H *9/04*

U.S. Cl. 361—91 **22 Claims**



1. A semiconductor integrated circuit device comprising:

an external terminal to which an input signal is applied;

a first circuit node;

an insulated gate field effect transistor coupled to said external terminal and said first circuit node for transmitting the input signal applied to said external terminal via a drain-source path thereof to said first circuit node, a gate of said first insulated gate field effect transistor being connected to an output terminal of a pulse generator circuit generating a switch signal;

a resistance element inserted between said external terminal and said insulated gate field effect transistor; and

an input circuit coupled to the first circuit node to receive said input signal transmitted to said first input circuit node via said drainsource path of said insulated gate field effect transistor,

wherein said resistance element has a resistance value so set that when an abnormal surge voltage having a voltage level greater than a normal predetermined input signal voltage level is applied to said external terminal, said resistance element reduces a breakdown current flowing through a semiconductor junction of said insulated gate field effect transistor to a level lower than a breakdown current level that causes breakdown of a gate insulating film of said insulated gate field effect transistor.

4,437,136

ELECTROMAGNET

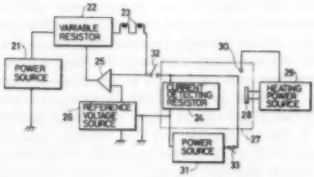
Etsuji Yamamoto, Hachioji; Kensuke Sekihara, Shinjuku, and Hideki Kohno, Suginami, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 16, 1982, Ser. No. 389,075

Claims priority, application Japan, Jun. 24, 1981, 56-96699

Int. Cl.³ H01H *47/00*

U.S. Cl. 361—146 **11 Claims**



1. An electromagnet comprising an electromagnet exciting coil, a current detecting means for detecting the current flowing through said coil, a control means for controlling the current supplied to said coil in accordance with the output from said current detecting means, and a heating means for heating said current detecting means, said electromagnet characterized in that said current detecting means is heated by said heating means when said electromagnet is not on working.

4,437,137

ELECTRONIC DOOR LOCKING SYSTEM FOR AN AUTOMOTIVE VEHICLE

Haruo Mochida, Kiyokawa, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Sep. 30, 1982, Ser. No. 432,383

Claims priority, application Japan, Jan. 14, 1982, 57-3323

Int. Cl.³ H01H *47/00*

U.S. Cl. 361—172 **5 Claims**

1. An electronic door locking system for an automotive vehicle for locking/unlocking vehicle doors, the vehicle being provided with vehicle devices, which comprises:

(a) a plurality of switches for outputting at least one predetermined door-locking octal coded digit and a sequence of predetermined door-unlocking octal coded digits;

(b) an octal-binary code converter connected to a plurality of said switches for converting the octal coded digits

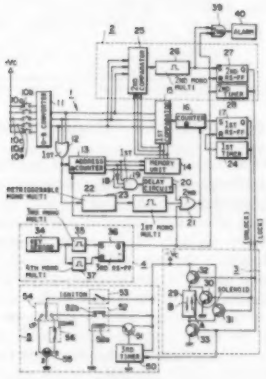
inputted from said switches into the corresponding binary coded digits;

(c) an address counter connected to said octal-binary code converter for counting up a plurality of the binary-coded signals outputted from said octal-binary code converter whenever one of said switches is depressed and outputting an address-designation signal in response to the number of signals outputted from said octal-binary code converter;

(d) a memory unit connected to said address counter for outputting a previously stored binary coded signal in response to the address-designation signal outputted from said address counter;

(e) a first comparator connected to said octal-binary code converter and said memory unit for outputtting a signal when one of the binary coded door-unlocking signals outputted from said octal-binary code converter agrees with one of the binary coded door-unlocking signals outputted from said memory unit in response to the respective address-designation signal outputted from said address counter;

(f) a counter connected to said first comparator for outputting a signal when said first comparator outputs the predetermined number of binary coded signals;



(g) a first reset-set flip-flop connected to said counter for outputting a door unlocking command signal when said first counter outputs the signal;

(h) a second comparator connected to said octal-binary code converter and said memory unit for outputting a signal when at least one binary coded door-locking signal outputted from said octal-binary code converter agrees with at least one binary coded door-locking signal outputted from said memory unit in response to the address-designation signal outputted from said address counter,

(i) a second reset-set flip-flop connected to said second comparator for outputting a door locking command signal when said second counter outputs the signal; and

(j) a door lock/unlock actuating solenoid connected to said first and second reset-set flip-flops for unlocking the vehicle doors when said first reset-set flip-flop is set and locking the vehicle doors when said second reset-set flip-flop is set; and

(k) means for actuating at least one vehicle device to its original disabled condition in response to the lock command signal generated from said second reset-set flip-flop.

4,437,138

FORCE SENSING MEANS AND METHOD OF PRODUCING SUCH SENSING MEANS

Klaus Nicol, Adelheidstrasse 13, D-6000 Frankfurt a.M.50, Fed. Rep. of Germany, assignor to Klaus Nicol, Frankfurt, Fed. Rep. of Germany

Filed Jul. 6, 1981, Ser. No. 280,515

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1980, 3025362

Int. Cl.³ H01G *7/00*

U.S. Cl. 361—283 **24 Claims**

1. A force sensing means comprising a capacitor arrangement of at least two capacitor plates and one compressible dielectric between at least two of said capacitor plates, the improvement wherein the capacitor plates are a metallic cloth, the warp threads and the weft threads of which define an angle which yields to the influence of external forces, and the dielectric is a macroscopically homogeneous, foamed, elastomeric material.

4,437,139

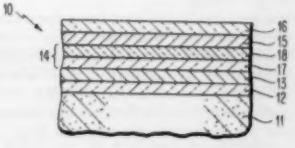
LASER ANNEALED DIELECTRIC FOR DUAL DIELECTRIC CAPACITOR

James K. Howard, Morgan Hill, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1982, Ser. No. 450,629

Int. Cl.³ H01G *3/075, 7/00;* **H01L** *21/26*

U.S. Cl. 361—313 **22 Claims**



18. A capacitor structure comprised of a dual dielectric between two electrodes wherein said dual dielectric comprises:

a first leakage current preventing dielectric layer adjacent a first one of said electrodes; and

a second dielectric layer between said first dielectric layer and a second one of said electrodes, said second dielectric layer being an amorphous thin film layer of a ferroelectric forming titanate or zirconate which is laser annealed to a crystalline ferroelectric.

4,437,140

PRINTED CIRCUIT DEVICE

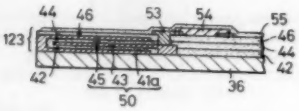
Sadahiro Ohyama, Chigasaki; Hiroshi Kato, Machida; Sadao Yaguchi; Mikito Baba, both of Yokohama, and Morikazu Okada, Atsugi, all of Japan, assignors to Mitsumi Electric Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 231,585, Feb. 3, 1981, abandoned, which is a continuation of Ser. No. 20,629, Mar. 14, 1979, abandoned. This application Oct. 12, 1982, Ser. No. 433,729

Claims priority, application Japan, Jun. 28, 1978, 53-77340; Jul. 10, 1978, 53-83785; Jul. 25, 1978, 53-90757; Aug. 14, 1978, 53-111304[U]; Nov. 22, 1978, 53-144886; Dec. 4, 1978, 53-149075; Dec. 4, 1978, 53-149074

Int. Cl.³ H05K *01/18*

U.S. Cl. 361—402 **9 Claims**



1. A printed circuit device comprising:

a ceramic base plate; and

a circuit pattern layer disposed on one surface of said base plate, said circuit pattern layer comprising a plurality of electric conductor layers and insulating layers in an alternate stacked laminar-arrangement, said

electric conductor layers and said insulating layers each having a predetermined pattern, a predtermined part of said circuit pattern being constituted by a first conductor layer, an intermediate conductor layer, a second conductor layer, a first insulating layer, and a second insulating layer,

said intermediate conductor layer being stacked adjacent said first insulating layer on one surface thereof and being stacked adjacent said second insulating layer on the other surface thereof, said first insulating layer being stacked with said first conductor layer, said second insulating layer being stacked with said second conductor layer,

said first and second insulating layers being connected and forming an insulating enclosure which is disposed around intermediate conductor layer in a cross section taken along a plane perpendicular to the surface of the base plate,

said first and second conductor layers being connected and forming a conductor enclosure disposed around said insulating enclosure in said cross section,

said intermediate conductor layer forming a conducting layer electrically connected to a power supply terminal mounted on said base plate,

said conductor enclosure forming an electric conductive layer for grounding,

said intermediate conductor layer being apropriately formed with narrow parts and wider parts in its extension,

coil parts being formed by said narrow parts, and capacitor parts being formed by said narrow parts, said wider parts, said insulating enclosure, and said conductor enclosure,

said coil parts cooperating with said capacitor parts so as to constitute the equivalent of a low-pass filter on only one surface of said base plate.

4,437,141

HIGH TERMINAL COUNT INTEGRATED CIRCUIT DEVICE PACKAGE

Jon S. Prokop, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 14, 1981, Ser. No. 301,698

Int. Cl.³ H05K *1/14*

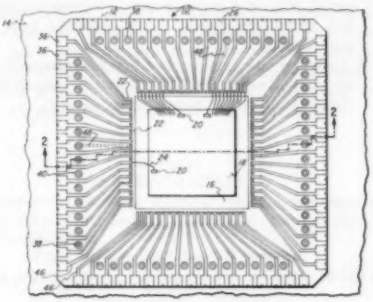
U.S. Cl. 361—403 **12 Claims**

1. A surface mounted high terminal count integrated circuit device package for solder attachment to a substrate comprising:

(a) a support member having a centrally disposed chip connect area, top and bottom surfaces and periphery forming sides and walls forming notches in the sides of said support member and a plurality of holes in said support member in preselected patterns adjacent to the notched periphery thereof;

(b) electrical metallizations on the walls of said notches and plurality of holes of the support member, said metallization of the notches forming metallized notches and said metallization of the holes forming cylindrically shaped electrical leads therethrough, said metallized notches and holes for forming solderable connections between the package and substrate;

(c) a plurality of wire bonding terminals selectively posi-



tioned on the support member adjacent said chip connect area;

(d) a plurality of trace conductors having first and second ends, said first ends electrically connected to said plurality of wire bonding terminals; and

(e) a plurality of expanded terminal pads mounted on the top and bottom surfaces of the support member, said expanded pads of the top surface electrically connected to the second ends of the trace conductors and together with the expanded pads of the bottom surface electrically connected to the notch and hole metallizations of the support member in open communication with the metallized notches and holes thereof whereby when the bottom pads are soldered to the substrate, solder rises up the open metallized notches and holes to form solder fillets therein for electrical connection of the substrate and for visual inspection thereof.

4,437,142

LIGHTING FIXTURE WITH SNAP REPLACEABLE BULB FEATURE

Anthony C. Donato, Westfield, and Neil Russo, Howell, both of N.J., assignors to Lightolier Incorporated, Jersey City, N.J.

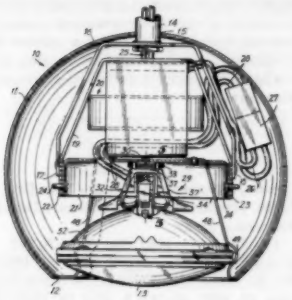
Filed Apr. 23, 1982, Ser. No. 371,077

Int. Cl.³ H01R *33/00*

U.S. Cl. 362—226 **8 Claims**

1. A lighting fixture for a PAR lamp or like bulb of the type which includes a shallow body having a convex rear surface including a rearwardly facing pair of generally flat metallic terminal strips, including portions arrayed in generally coplanar alignment perpendicular to the longitudinal axis of said bulb, said fixture comprising a reflector housing, a socket member mounted within said housing, said socket member including an insulating body portion having a transversely extending downwardly open cross channel, a pair of alignment wings formed from said body portion, each said wing having a undersurface portion merging with an opposite boundary of said channel, said undersurfaces being generally concave and

converging upwardly and inwardly toward the geometric center of said channel, said wings together defining a funnel configuration leading into said channel, a pair of contact members recessed within said channel and adapted to be connected to a current source, said contact members each including a pair of spring finger portions, the finger portions of each pair being



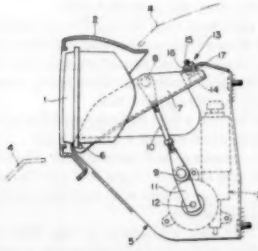
disposed at opposite sides of said channel, cam means on said fingers positioned to coact with the terminals of said bulb for spreading the fingers of each pair responsive to upward movements of said terminal strips within said channel and retainer portions on said fingers positioned to enter behind said terminals strips and restrain said bulb after seating, against movement outwardly of said channel.

4,437,143

RETRACTABLE HEADLAMP ASSEMBLY FOR AUTOMOBILES

Motomu Hayashi, Okazaki; Atuo Ishikawa, Toyota, and Kazuyoshi Yukimoto, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 19, 1982, Ser. No. 369,366
Claims priority, application Japan, Apr. 22, 1981, 56-058383
Int. Cl.³ H01G *1/06*
U.S. Cl. 362—272 **3 Claims**



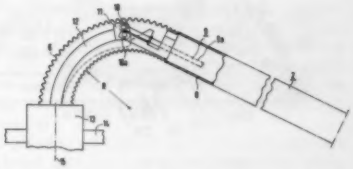
1. A retractable headlamp assembly for use on an automobile frame having a front hood, comprising:
a bracket adapted to be mounted on the automobile frame;
a headlamp pivotably mounted on said bracket;
a lamp link fixed to said headlamp;
a motor mounted on said bracket and having a rotatable shaft, said motor being de-energizable to stop said rotatable shaft within an angular interval between a normal stop position and an angularly displaced position which is angularly spaced through a slip angle from said normal stop position;
a link mechanism operatively connected to and extending between said lamp link and said rotatable shaft, said motor being energizable to cause said headlamp to be angularly moved through said link mechanism between a first position at which said headlamp projects out of the front hood and is turned on, and a second position at which said headlamp is retracted within said front hood and turned off; and
adjustable stop means for determining said first position in conformance with the slip angle of said angularly displaced stop position of said motor.

4,437,144

HEIGHT-ADJUSTABLE SUPPORT ARM WITH A PARALLELOGRAM LINKAGE

Werner Guenther, Bensheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 12, 1982, Ser. No. 397,213
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1981, 8121048[U]; Jul. 17, 1981, 8121076[U]
Int. Cl.³ F21V *21/28*
U.S. Cl. 362—275 **9 Claims**



1. A height-adjustable support arm comprising:
a stationary first articulated head connected to a mounting means for said support arm;
a second articulated head movable relative to said first articulated head;
a parallelogram linkage including and connecting said first and second articulated heads, said parallelogram linkage further including a tubular member forming a first leg of said parallelogram linkage and a rod slidably guided in said tubular member forming a second leg of said parallelogram linkage;
a support bar connected to said second articulated head having a free end to which a device to be supported is attached; and
a flexible sheathing completely surrounding and covering said second articulated head and said support bar, said sheathing having an exterior diameter substantially equal to the diameter of said tubular member and having one end connected to said tubular member and an opposite end connected to the supported device for permitting free movement of said second articulated head and said support bar within said sheathing.

4,437,145

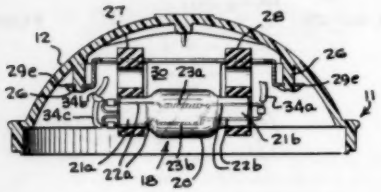
SHOCK ABSORBING LAMP ASSEMBLY FOR BASELESS CARTRIDGE BULBS AND THE LIKE

Philip C. Roller, Ashville, and Chris A. Suckow, Frewsburg, both of N.Y., assignors to Truck-Lite Company, Inc., Falconer, N.Y.

Filed Aug. 24, 1982, Ser. No. 410,957
Int. Cl.³ F21V *7/00*
U.S. Cl. 362—306 **19 Claims**

1. A shock absorbing lamp assembly for baseless cartridge bulbs and the like for use as marker, signaling and driving lamps for on and off road motor vehicles, trailers and the like, comprising a rear backing lamp housing member serving as a reflector and lamp housing having a forwardly facing cavity bounded by a concavely-curved reflector surface defining an optical axis, a lens cover member concentric with said optical axis joined about its perimeter to the housing member to cover

said cavity, an elongated baseless cartridge lamp bulb having a longitudinal bulb axis in said cavity having a glass envelope providing a generally cylindrical central bulb portion concentric with said bulb axis housing filament wire and a pair of opposite generally flattened bulb end portions of smaller vertical dimensions than the diameter of the cylindrical central portion hermetically sealing about filament support pins so that the glass envelope of the bulb rigidly supports the internal and external portions of the filament support pins in fixed spatial relationship, a baseless cartridge-type bulb mount assembly defining forwardly extending substantially parallel arms and a rearwardly spaced interconnecting base portion embracing the flattened end portions of the bulb glass envelope and extending in a U-shaped path in top plan generally rearwardly toward said reflector surface from the bulb to support the same with said bulb axis disposed horizontally and transversely intersect-



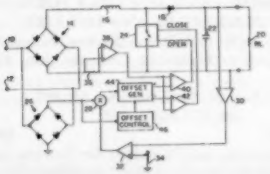
ing said optical axis, said concavely-curved reflector surface having anchor formations and means fixing said interconnecting base portion to said anchor formations, and said arms of said bulb mount assembly being forwardly projecting vertically and laterally flexible shock absorbing arms extending parallel to each other generally perpendicular to said bulb axis from said base portion formed of rubber-like material of about 60 durometer hardness, said shock mounting arms having terminal receiving apertures formed therein for receiving said flattened end portions of the baseless bulb in frictionally constrained relation therein and having integral unitary portions projecting rearwardly into reliably supported relation with said base portion positioning said arms in parallel vertical planes substantially maintaining the filament wire of said baseless bulb horizontally disposed in proper focal position with respect to said lens cover member.

4,437,146

BOOST POWER SUPPLY HAVING POWER FACTOR CORRECTION CIRCUIT

Ralph F. Carpenter, Seattle, Wash., assignor to Pacific Electro Dynamics, Inc., Redmond, Wash.

Filed Aug. 9, 1982, Ser. No. 406,164
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—21 **17 Claims**



1. In a boost power supply having a diode-rectifying bridge, an inductor, diode and filter capacitor connector in series with said bridge, a shunting switch in parallel with the series combination of said diode and said filter capacitor, an improved power factor correction circuit comprising:

current-sensing means for generating a current-indicating signal indicative of the current flowing into said power supply circuit;

reference waveform generating means producing first and second reference waveforms, each a function of a sinusoidal voltage applied to said bridge, said first reference waveform being larger than said second reference waveform by a predetermined offset voltage; and

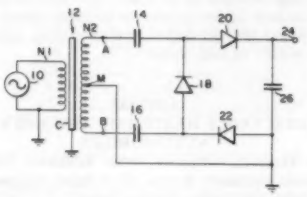
switch control means receiving said reference waveforms and the output of said current-sensing means for closing said shunting switch when the input current falls to said second reference waveform and for opening said shunting switch when said reference current rises to said first reference waveform.

4,437,147

RECTIFIER CIRCUIT

Yoshio Takamura, Yokahama, and Akira Nakajima, Yokosuka, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 17, 1982, Ser. No. 379,042
Claims priority, application Japan, May 19, 1981, 56-75178; May 19, 1981, 56-75179; May 19, 1981, 56-75180; May 19, 1981, 56-75181; May 19, 1981, 56-75182; May 19, 1981, 56-75183
Int. Cl.³ H02M *7/10*
U.S. Cl. 363—61 **5 Claims**



1. A rectifier circuit comprising:

a transformer having a primary winding for connection to an AC signal source and a secondary winding having a grounded center tap and first and second ends;

a first capacitor having a first end connected to said first end of said secondary winding and a second end;

a first and second rectifiers, each having first and second ends, said second end of said first rectifier and said first end of said second rectifier being coupled to said second end of said first capacitor, said first and second rectifiers being connected in series in the same rectifying direction;

a second capacitor having a first end connected to said second end of said second rectifier and a second end;

a third rectifier coupling said second end of said second capacitor with said first end of said first rectifier, said third rectifier being in series circuit with said first rectifier in the same rectifying direction;

a third capacitor coupling a junction of said first and third rectifiers to said second end of said secondary winding; and

a DC power source connected to a node between said second capacitor and said third rectifier.

4,437,148

PEAK VOLTAGE CLAMPED POWER SUPPLY

Gabriel G. Suranyi, Rockaway, N.J., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Dec. 9, 1981, Ser. No. 328,980
Int. Cl.³ H02P *13/26*
U.S. Cl. 363—89 **4 Claims**

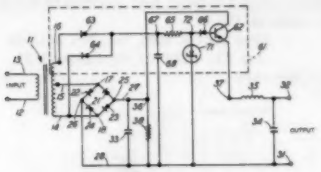
1. A circuit for efficiently stabilizing and limiting a direct current voltage at an output thereof comprising:

means for supplying a first full wave rectified voltage;

filter means for stabilizing and reducing the ripple of the first full wave rectified voltage;

a transistor having a collector terminal and an emitter terminal coupled in series with the filter means;

means, coupled to the transistor, for biasing the transistor to function in a lower power dissipating saturated mode over a greater portion of the expected operating range of the circuit when the output voltage of the circuit is less than a predetermined maximum and for biasing the transistor to function in a higher power dissipating unsaturated mode



over a lesser portion of said range when the output voltage of the circuit is substantially equal to the predetermined maximum; and

means for supplying a second full wave rectified voltage having a peak value different from the peak value of the first full wave rectified voltage; and wherein the biasing means includes a zener diode coupled to a base terminal of the transistor and, in series through a biasing impedance element, to the second full wave rectified voltage.

4,437,149

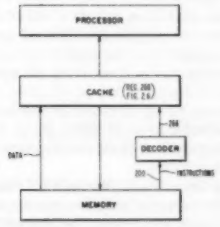
CACHE MEMORY ARCHITECTURE WITH DECODING

James H. Pomerene, Chappaqua, and Rudolph N. Rechtschaffen, Scarsdale, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,481

Int. Cl.³ G06F *9/30, 13/00*

U.S. Cl. 364—200 **11 Claims**



1. An information processing system including a central processor and a hierarchical memory system comprising:

at least one low speed, high capacity main memory having a relatively long access time and having a plurality of data pages stored therein,

at least one high speed, low capacity Cache memory means having a relatively short access time and adapted to store a predetermined plurality of subsets of the information stored in said main memory data pages, and

memory accessing control means for accessing data stored in said hierarchical memory system,

instruction decoding means located in a communication channel disposed between the main Memory and Cache memory for transferring data between said memories and operative in conjunction with the memory access controls to at least partially decode instructions being transferred from Memory to Cache, and

means for storing said instructions in the Cache in at least partially decoded form.

4,437,150

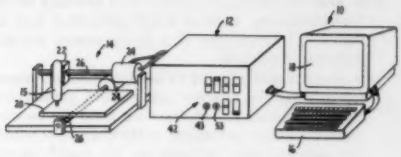
TOOL MANIPULATING METHOD AND APPARATUS FOR MULTIPLE JOB PROCESSING

William V. Dahlgren, Jr., 240 Dolores, Apt. 138, San Francisco, Calif. 94103; Lewis S. Silverstein, 695 Connecticut Ave., #4, San Francisco, Calif. 94107, and Edward W. Claire, 5332 Shafter Ave., Oakland, Calif. 94618

Filed Apr. 27, 1981, Ser. No. 257,559

Int. Cl.³ G05B *19/42;* **B23Q** *17/18*

U.S. Cl. 364—474 **21 Claims**



1. A method of manipulating a tool of the type in which a tool is positionally manipulated with respect to a workpiece and in accordance with dimensional and copy information supplied by a user, the dimensional and copy information originating from a plurality of separate and distinct jobs wherein the copy information includes a plurality of characters including the steps of

generating a plurality of position and control parameters which are based upon the user-supplied dimensional information;

generating a plurality of copy parameters which are based upon the dimensional information and the user-supplied copy information;

generating a job reference parameter for each job which is indicative of the physical location of the associated job on the workpiece;

transferring the control, position, copy and job reference parameters and the user-supplied copy information to a control means;

transforming the position, control and job reference parameters into drive signals wherein for each job the corresponding drive signals are referenced to the associated job reference parameter;

selecting master font instructions, from a master font memory within the control means, which selected master font instructions correspond to the characters in the user-supplied copy information wherein the master font memory stores a plurality of the master font instructions, each of which prescribes tool movements to produce one of a predesignated plurality of different characters;

modifying the selected master font instructions according to the copy parameters;

converting the modified master font instructions into drive signals wherein for each job, the corresponding drive signals are referenced to the associated job reference parameter;

transferring all drive signals to a tool manipulating means;

positioning the tool according to the position and job reference drive signals; and

manipulating the tool in accordance with the control and modified-copy instruction drive signals, so that each separate and distinct job is performed on the same workpiece.

9. An apparatus for manipulating a tool with respect to a workpiece in which a tool is manipulated by electronic means and in accordance with dimensional and copy information supplied by a user, the dimensional and copy information originating from a plurality of separate and distinct jobs the tool manipulating system comprising

an intelligent terminal for receiving the information from the user, and for generating control, position and copy parameters, the terminal including

means for generating a plurality of different dimensional layouts in accordance with the user-supplied informa-

tion, and for converting the generated layouts into control, position and copy parameters and for generating a job reference parameter for each job which is indicative of the physical location of the associated job on the workpiece;

a control unit, which is communicatively coupled to the intelligent terminal, the control unit receiving the control, position, job reference, and copy parameters and the copy information from the terminal, and supplying font information to the terminal, the control unit including

font memory means for supplying a plurality of master font definitions, each of which prescribes tool movements to produce one of a predesignated plurality of different characters;

processing means coupled to the font memory means for interpreting the position and control parameters, for selecting master font instructions from the master font memory which correspond to the characters within the user-supplied copy information, for modifying the selected master font definitions according to the copy parameters, and for generating drive signals in accordance with control, job reference, and position parameters and the modified master font definitions, wherein for each job the corresponding drive signals are referenced to the associated job reference parameter; and

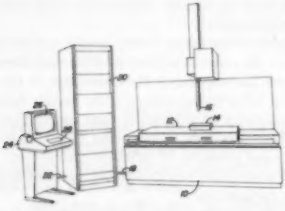
mechanical tool manipulating means responsive to the drive signals from the control unit, the mechanical tool manipulating means including the tool and means for manipulating the position of the tool in accordance with the drive signals, so that each separate and distinct job is performed on the same workpiece.

4,437,151

COORDINATE MEASURING MACHINE INSPECTION AND ADJUSTMENT METHOD

James J. Hurt, Bettendorf, and Susan K. Foss, LeClaire, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Apr. 16, 1982, Ser. No. 368,950
Int. Cl.³ G01C *25/00*
U.S. Cl. 364—571 **7 Claims**



1. A method for determining the alignment of axes of a coordinate measuring machine (CMM) having a probe movable along the axes, the method comprising the steps of:

(a) installing an artifact on the CMM, the artifact having at least two ends separated by a certain distance;

(b) moving the probe and at least one end of the artifact to a plurality of positions defined by the artifact so that the CMM generates a set of Cartesian coordinates cooresponding to said plurality of positions;

(c) generating a set of distance equations, each distance equation being for the distance between a first position and a second position where said first and second positions are defined by the artifact and wherein at least one of said first and second positions is represented by one of said set of Cartesian coordinates, each distance equation being in terms of the CMM generated coordinates, the certain distance and axis alignment error and scaling error factors to be determined;

(d) determining said error factors by solving said set of distance equations for said error factors; and

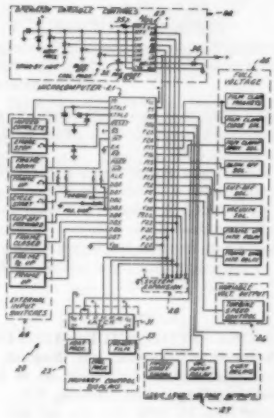
(e) adjusting the CMM according to the determined error factors.

4,437,152

CONTROL ARRANGEMENT FOR MULTIFUNCTION INDUSTRIAL MACHINE

Stephen H. Jones, LaFrance, S.C., assignor to Nordson Corporation, Amherst, Ohio

Filed May 8, 1981, Ser. No. 261,749
Int. Cl.³ G06F *15/46*; B65B *53/02*
U.S. Cl. 364—138 **4 Claims**



2. A method for controlling an industrial machine during an operational cycle and for monitoring a plurality of variable proportional control inputs comprising the steps of:

(a) recalling a maximum value for one of the control inputs;

(b) addressing the proportional control input corresponding to the recalled maximum value;

(c) determining the proportional setting of the addressed control;

(d) multiplying the determined proportion by the recalled maximum value to determine a proportional value;

(e) controlling the industrial machine in response to the said proportional value;

(f) repeating the steps (c) through (e) during at least a segment of the industrial machine operational cycle, whereby changes in said proportional setting will effect changes in machine control during at least said segment of the operating cycle.

4,437,153

APPARATUS CONTROL SYSTEM

Mituo Kamiyama, Tokyo, and Hirotoshi Namazue, Yokohama, both of Japan, assignors to Kokusan Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1981, Ser. No. 300,472
Int. Cl.³ G06F *15/46*; B60R *25/10*
U.S. Cl. 364—140 **4 Claims**

1. An apparatus control system, comprising:

an apparatus to be controlled;

a number presetter in the form of a switch board including a certain number of pushbutton switches for delivering a number code signal by depressing said pushbutton switches sequentially and selectively in a desired order;

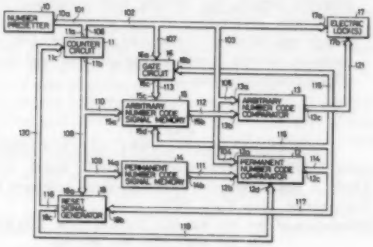
a first memory for storing a predetermined content representing a permanent code signal specifically selected beforehand for the said apparatus to be controlled;

a first comparator for comparing the permanent memory content in said first memory with a first code signal generated at and delivered by said presetter;

a second memory for storing an arbitrary number code;

a second comparator being activated by said first comparator upon a match between said first code signal and said permanent code signal and for comparing a second code signal generated by said number presetter with said arbitrary number code;

an address counter for delivering address signals to said first



and second memories upon reception of successive segments of said code signal fed from the presetter;

a first shift register for receiving output signals from the first comparator; and

a second shift register for receiving output signals from the second comparator;

said apparatus being brought into actuation or release upon reception of the presetter's output number code signal and the output signal from one of said shift registers only when there is concurrence of output signals of said first and second comparators.

4,437,154

DEVICE FOR GENERATING CONTROL SIGNALS WITH A PRIMARY CONTROL UNIT AND AN AUXILIARY CONTROL UNIT

Hermann Eisele, Schwieberdingen; Heinz Möller, Stuttgart, and Manfred Schmitt, Heppenheim-Oberhambach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stutgart, Fed. Rep. of Germany

Filed Aug. 19, 1981, Ser. No. 294,093

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1980, 3031360

Int. Cl.³ G06F *15/46, 11/16, 15/16*

U.S. Cl. 364—187 **15 Claims**

1. A device for generating repeated control signals for an electrical consumer, the device having:

a primary control unit which is connected to generate a first control pulse signal;

an auxiliary control unit which is connected to generate a second control pulse signal;

wherein the auxiliary control unit and the primary control unit are connected to operate in parallel, and

wherein the second control pulse signal is phase shifted with respect to the first control pulse signal;

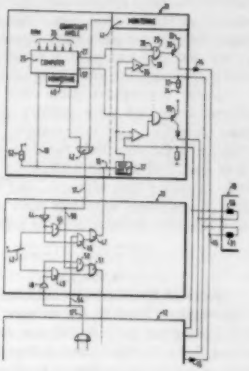
an electrical consumer which is connected to the primary and auxiliary control unit to receive continuously the first and second control pulse to regulate the electrical consumer;

a limiting unit to reduce the amplitude and/or pulse duration of the second control pulse signals of said auxiliary control unit;

an error recognition circuit connected to detect errors of the primary control unit;

a switchover device connected to the error recognition circuit, the primary control unit and the auxiliary control unit; and

upon detection of errors by the error recognition circuit, the switchover device, at switchover instant, causes the limiting unit to reduce the amplitude and/or pulse duration of



the first control pulse signals rather than the second control pulse signals, whereby the second control pulses regulate the electrical consumer.

4,437,155

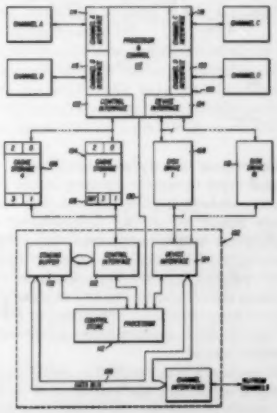
CACHE/DISK SUBSYSTEM WITH DUAL AGING OF CACHE ENTRIES

Daniel D. Sawyer, Roseville, and Marvin J. Thompson, Anoka, both of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Nov. 14, 1980, Ser. No. 207,059

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **8 Claims**



1. In a data processing system including a host processor for issuing addressing signals specifying data to be accessed, a mass memory, a cache store for storing segments, and a segment descriptor table for storing segment descriptors, there being a segment descriptor associated with each data segment in said cache store and including age information defining, from the most recently accessed to the least recently accessed, the relative lengths of time since each associated data segment has been accessed, the system including means for transferring to said mass memory the least recently accessed segments in

said cache store in order to make room for more data segments, the improvement comprising:

means connected to said host processor, said mass memory and said cache store for transferring from said mass memory to said cache store not only a data segment containing data specified by said addressing signals but not resident in said store, but also a number of additional segments; and,

age modifying means for modifying said age information in said segment descriptors each time data segments are transferred from said mass memory to said cache store to produce modified age information, said modified age information indicating that the data segment containing the data specified by said addressing signals is the most recently accessed data segment, and indicating that said number of additional segments have an age intermediate the most recently accessed and the least recently accessed.

4,437,156

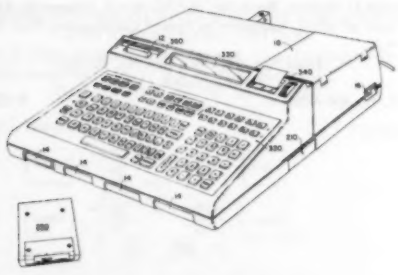
PROGRAMMABLE CALCULATOR

Chris J. Christopher; Fred W. Wenninger; Donald E. Morris; Wayne F. Covington; Jerry B. Folsom; Joseph W. Beyers, all of Loveland; John H. Nairn, and Jeffrey C. Osborne, both of Longmont, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 31,341, Apr. 19, 1979, abandoned, which is a continuation of Ser. No. 835,371, Sep. 21, 1977, abandoned, which is a division of Ser. No. 638,381, Dec. 8, 1975, Pat. No. 4,075,679. This application Jan. 21, 1981, Ser. No. 227,019

Int. Cl.³ G06F *9/06, 9/40, 3/023*

U.S. Cl. 364—200 **4 Claims**



1. An electronic calculator comprising:

keyboard input means for entering one or more lines of one or more alphanumeric statements each into the calculator;

memory means for storing alphanumeric information, including one or more programs, each program comprising a plurality of lines of one or more alphanumeric statements entered from the keyboard input means;

processing means, coupled to said keyboard input means and said memory means, for processing a said program of lines of one or more alphanumeric statements stored in said memory means;

output display means, coupled to said processing means, for visually displaying alphanumeric information, including the results of alphanumeric statements processing by said processing means, to a user; and

magnetic tape reading and recording means for transferring alphanumeric information between the memory means and an external magnetic tape;

said keyboard input means including record memory control means for initiating the recording of the contents of said memory means onto said external magnetic tape and load memory control means for initiating the loading of the previously recorded contents of said memory means back into said memory means;

said processing means including logic means responsive to actuation of said record memory control means, during processing of a program stored in said memory means, for halting processing of that program and for causing the contents of said memory means to be recorded onto said external magnetic tape, said logic means thereafter being responsive to actuation of said load memory control means for causing the previously recorded contents of said memory means then stored on the external magnetic tape to be loaded into said memory means, said logic means being operative, following loading into the memory means of the previously recorded contents of said memory means, for causing said processing means to commence processing of the program, processing of which was halted in response to actuation of the recorded memory control means, at the point in said program at which processing was halted.

4,437,157

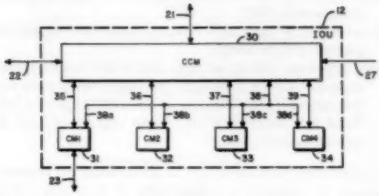
DYNAMIC SUBCHANNEL ALLOCATION

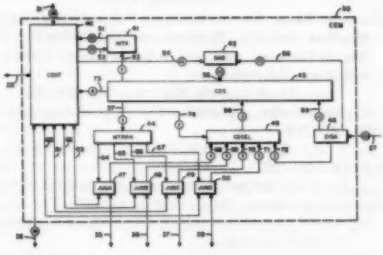
Jerome J. Witalka, Minneapolis; Duane G. Kurth, Anoka, and David J. Baber, Shoreview, all of Minn., assignors to Sperry Corporation, New York, N.Y.

Continuation of Ser. No. 926,483, Jul. 20, 1978. This application Apr. 20, 1981, Ser. No. 255,585

Int. Cl.³ G06F *3/00, 3/04*

U.S. Cl. 364—200 **2 Claims**





1. In a computer with means for initializing the operation of said computer and with an Input/Output unit having a plurality of Input/Output channels wherein one or more of said Input/Output channels is each capable of maintaining a plurality of independent asynchronous buffered Input/Output transfers and having a controller capable of controlling said plurality of asynchronous buffer Input/Output transfers through the use of a plurality of Input/Output subchannels wherein each of said plurality of independent asynchronous buffered Input-/Output transfers is controlled through the use of a different one of said plurality of Input/Output subchannels, the improved apparatus for allocating each of said plurality of Input-/Output subchannels to one of said plurality of Input/Output channels and for conducting buffered Input/Output transfers operative in accordance with Externally Specified Indexing (ESI), an improvement to such apparatus according that each of a plurality of Input/Output subchannels—each said Input-

/Output subchannels being a designation of the hardware resource, specifically the Buffer Control Words (BCWs) contained within I/O General Register (IGR), which designated resource is dedicated to the control of communication upon an Input/Output channel with a corresponding one of a plurality of peripheral devices which share said Input/Output channel—are allocable, meaning assignable, to each of a plurality of Input/Output channels—each said Input/Output channel being a bandwidth limited physical communication path between said Input/Output apparatus and a multiplicity of peripheral devices,—said inprovement comprising:

random access memory means, called a Channel Descriptor Stack (CDS), for storing an allocation of each of said plurality of Input/Output channels to a one of said plurality on Input/Output subchannels, wherein said storing means has a one addressable location corresponding to each of said plurality of Input/Output subchannels:

loading means, called a System Support Processor (SPS), for entering said allocation of each of said plurality of Input-/Output channels to said one of said plurality of Input-/Output subchannels into said storing means; and

control means responsively coupled to said storing means for causing each of said buffered Input/Output transfers as occur upon each of said plurality of Input/Output subchannels to physically transpire upon said allocated one of said plurality of Input/Output channels;

whereby said hardware resource associated with each said Input/Output subchannels, which resource is dedicated to the control of communication upon an Input/Output channel, is allocated, meaning distributed, in accordance with said stored allocation to a one of said bandwidth limited physical I/O channel communication paths;

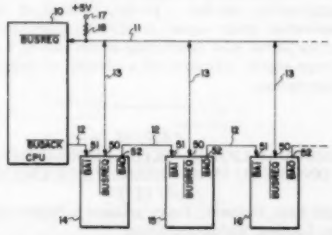
whereby the designation of hardware resource within an Input/Output apparatus operative in accordance with Externally Specified Indexing is allocated, meaning distributed, to ones of bandwidth limited physical I/O channel communication paths in accordance with stores within a random access memory means for storing.

4,437,158

SYSTEM BUS PROTOCOL INTERFACE CIRCUIT

Peter H. Alfke, Los Altos Hills; Krishna Rallapali, San Jose, both of Calif., and David MacMillan, Boston, Mass., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 28, 1981, Ser. No. 306,453
Int. Cl.³ G06F *3/02, 9/18*
U.S. Cl. 364—200 **5 Claims**



1. In a computer system having a central control unit and a plurality of peripheral units all being coupled to a common bus, each of said peripheral units being further coupled in parallel to said central control unit by a bus request line through a respectively comprised bus request line terminal for requesting the central control unit for control of said bus and each of said peripheral units being further coupled in series to said central control unit by a bus acknowledgement line to said central control unit through a respectively comprised bus acknowledgement line input terminal for receiving from said central control unit a bus acknowledgement signal granting access to said bus in response to a bus request, and through a respectively comprised bus acknowledgement line output terminal for relaying said received signal to subsequent peripheral units only when it has not requested bus control or when it has initiated an outstanding bus control request and also has finished accessing the bus in response to said received signal, an interface circuit associated with each peripheral unit, respectively for preventing a bus request conflict between said peripheral units, said associated interface circuit respectively comprising:

logic means coupled to said bus acknowledgement line input terminal as a respectively associated peripheral unit and to said bus acknowledgement line output terminal of said respectively associated peripheral unit for generating a combinatorial logic output signal responsive to the signals on said bus acknowledgement line input and output terminals, and;

latching means coupled in series between said bus request line and said bus request line terminal of said respectively associated peripheral unit, and further connected to the output of said logic means and said bus acknowledgement line output terminal of said respectively associated peripheral unit, for latching itself into a first state in response to a bus request from said respectively associated peripheral unit and for unlatching itself from said first state when the associated peripheral unit has received said but acknowledgement signal if said associated peripheral unit has not initiated any outstanding bus control request, and when the associated peripheral unit has received said bus acknowledgement signal and also has finished accessing said bus in response to said received bus acknowledgement signal if said associated peripheral unit has initiated said outstanding bus control request,

(1) the latching into said first state by anyone of said latching means causes all other latching means to be also latched into said first state,

(2) a bus request signal is maintained over said bus request line as long as any of said latching means is latched in said first state,

(3) said central control unit discontinues said acknowledgement signal over the bus acknowledgement line only when all of said latching means have been respectively unlatched, and

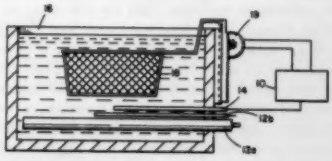
(4) in response to said acknowledgement signal from the central control unit, all latching means latched in said first state are sequentially unlatched in corresponding order of the respective time of receipts of said acknowledgement signal by their respectively associated peripheral units.

4,437,159

COOKING COMPUTER

Gerald F. Waugh, Shreveport, La., assignor to The Frymaster Corporation, Shreveport, La.

Filed May 15, 1981, Ser. No. 264,173
Int. Cl.³ G06F *15/46;* H05B *1/02*
U.S. Cl. 364—400 **17 Claims**



11. A deep fat fryer comprising a frypot having heating means located therein for heating shortening to a preselected cooking temperature, means independent of said heating means for sensing a temperature of said shortening in said frypot, means for storing a cooking time, a means for timing a cooking

cycle of a product within said shortening using said cooking time and periodically adjusting said cooking time by applying a time compensation factor to compensate for deviations of said sensed temperature from said preselected temperature, the magnitude of said periodic adjustments being proportional to said time compensation factor and said deviation, means for storing a signal determinative of the magnitude of said time compensation factor for a given temperature condition, and means for providing a termination signal indicative of the termination of a cooking cycle.

4,437,160

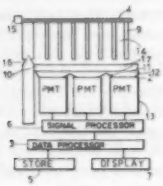
PHOTON EMISSION IMAGING APPARATUS AND METHOD

Alvin S. Blum, 2350 Del Mar Pl., Fort Lauderdale, Fla. 33301

Filed Jul. 31, 1980, Ser. No. 173,962

Int. Cl.³ G01T *1/20*

U.S. Cl. 364—414 **14 Claims**



1. A system for imaging a distributed source emitting photons with scintillation means in the path of said photons to provide light indications and a plurality of photodetector means viewing said light indications in said scintillation means comprising: signal processing means connected to said photodetector means for processing photodetector signal responses to said light indications; data processing means; data storage means; connecting means interconnecting said signal processing means with said data processing means and said storage means; said storage means is for storing known source location data and a plurality of response data generated from said photodetector means when said scintillation means was engaged by emissions from sources in known locations; said data processing means including means for comparing response data from a source in an unknown location with said stored response data from sources in known locations to determine degree of matching and thereby the location of the unknown source from the stored known source location data of the matching stored response data when and if an acceptable correlation is found; calibration means for providing to said storage means said plurality of response data from sources in known locations including, (a) calibration radiation source means so disposed as to irradiate said scintillation means at a plurality of locations simultaneously, (b) a first approximate locating means for recording a first approximate location of each calibration response data on the basis of the relative position of each photodetector means and the signal thereon, (c) center locating means for analyzing a plurality of first approximate locations from a plurality of calibration radiations to determine the locations of a plurality of centers of concentrations of said first approximate locations when calibration scintillations are not uniformly distributed in said scintillation means, (d) a second approximate locating means for recording a second approximate location of each calibration response data to correspond to the location of that center which is in closest proximity to said first approximate location, and selection means for optionally discarding certain of the response data on the basis of their differences from other response data sharing a common location.

4,437,161

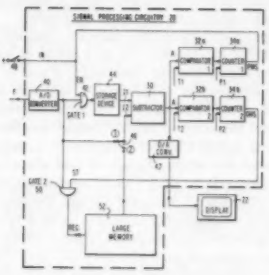
MEDICAL IMAGING APPARATUS

William Anderson, Glenview, Ill., assignor to Siemens Gammasonics Inc., Des Plaines, Ill.

Filed Jun. 29, 1981, Ser. No. 278,481

Int. Cl.³ G06F *15/42;* **H04N** *5/14*

U.S. Cl. 364—414 **14 Claims**



1. In a medical imaging apparatus containing

means for detecting radiation emitted from an object under examination,

means associated with said detecting means for forming an imaging signal from said radiation, said imaging signal being composed of a sequence of individual image signals each representing an individual radiation image of said object under examination and said imaging signal containing a first individual image signal and second individual image signals following said first individual image signal;

signal processing means for processing said imaging signal and for forming a display signal thereof, and

display means for receiving said display signal and for displaying a sequence of images of said object under examination,

the improvement wherein said signal processing means comprises

storage means for storing said first individual image signal, thereby forming a reference image signal;

subtracting means for subtracting said reference image signal from each of said second individual image signals, thereby forming a difference imaging signal composed of a sequence of individual difference image signals; and

monitoring means receiving said difference image signal for determining whether a portion of each of said second individual image signals is different from said reference image signal, said monitoring means issuing a change-of-image signal indicative of a change of image intensity distribution.

4,437,162

RESIDUAL LIQUID METER USING COMPUTER RESPONSIVE TO MEASUREMENTS OF LIQUID LEVEL AND FLOW

Yoshiaki Kato, Fujisawa, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Apr. 13, 1981, Ser. No. 253,884

Claims priority, application Japan, Apr. 14, 1980, 55-49339[U]

Int. Cl.³ G01M *13/26*

U.S. Cl. 364—442 **13 Claims**

1. A residual-fuel meter for an automotive vehicle, which comprises:

(a) initial fuel setting means for presetting the initial quantity of fuel within the fuel tank;

(b) consumed-fuel measuring means for measuring the fuel consumed from the fuel tank;

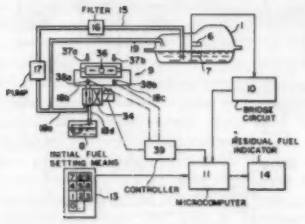
(c) a microcomptuer for storing the quantity of initial fuel

preset by said initial fuel setting means and the quantity of consumed fuel measured by said consumed fuel measuring means and for calculating the quantity of residual fuel by subtracting the consumed fuel quantity from the initial fuel quantity; and

(d) a residual fuel indicator for displaying the residual fuel quantity calculated by said microcomputer;

said consumed-fuel measuring means for measuring the fuel consumed including a ball oscillation flow meter comprising:

(a) a cylinder bore;



(b) a ball movably disposed within said cylinder bore, the specific gravity of said ball being almost the same as that of the fuel, said ball being moved in the same direction as that of fuel flow;

(c) a pair of position sensors including light-emitting elements and light-receiving elements for respectively deriving signals whenever said ball blocks the light emitted from said light emitting elements at either end of said bore;

(d) a two-way valve for reversing the direction of fuel flow in response to the signals derived by said position sensors; and

(e) a counter for counting the number of the signals from said position sensors to measure the quantity of flow.

4,437,163

METHOD AND APPARATUS FOR SYMPTOM DIAGNOSIS BY MONITORING VIBRATION OF SHAFT OF ROTARY MACHINE

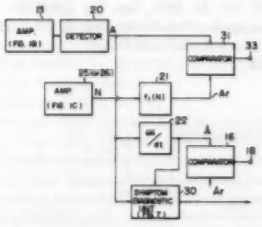
Nobuo Kurihara, Hitachiota; Yasuo Morooka; Mitsuyo Nishikawa, both of Hitachi; Kiyoshi Miura, Ibaraki, and Yoshitoshi Nagahashi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 30, 1981, Ser. No. 248,846

Claims priority, application Japan, Mar. 31, 1980, 55-40322

Int. Cl.³ G01P *15/00*

U.S. Cl. 364—508 **21 Claims**



1. A method of symptom diagnosis by continuously detecting vibration of the shaft of a rotary machine and monitoring a signal indicative of the detected shaft vibration for the diagnosis of the operating condition of the rotary machine, said method comprising:

establishing a predetermined safety region in which said detected shaft vibration signal is indicative of a relatively low level permitting continuous operation of the rotary machine;

monitoring the behaviour of said detected shaft vibration signal within said safety region; and

determining the presence of a symptom of unusual operation of the rotary machine on the basis of the result of monitoring of the behaviour of said detected shaft vibration signal within said safety region.

4,437,164

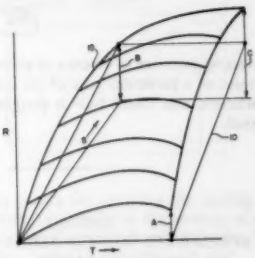
RIDGE CIRCUIT COMPENSATION FOR ENVIRONMENTAL EFFECTS

Howard R. Branch, III, Northfield, Conn., assignor to Bristol Babcock Inc., Waterbury, Conn.

Filed Mar. 5, 1981, Ser. No. 240,938

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—571 **85 Claims**



1. A strain gauge transducer circuit comprising:

first and second strain gauges;

at least one resistor, said resistor and said strain gauges being connected in series between the terminals of a power supply;

means for reading the voltage drops across each resistor and strain gauge; and

a computer to which are applied signals representative of the voltage drops across each resistor and strain gauge, said computer further comprising a processing unit and a memory unit, said memory unit containing a set of bridge completion constants which in conjunction with the signals representative of said voltage drops is used by the processing unit to calculate the output of a bridge circuit that contains said strain gauges and is compensated for zero point and span error at two temperatures.

4,437,165

OVERFLOW DETECTION FOR A DECIMAL ARITHMETIC UNIT

Osamu Onodera, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 10, 1981, Ser. No. 282,167

Claims priority, application Japan, Jul. 11, 1980, 55-93950

Int. Cl.³ G06F *7/48*

U.S. Cl. 364—749 **5 Claims**

1. A data processing apparatus in which a decimal operation is effected by means of a decimal arithmetic unit having an operation width corresponding to a plurality of bytes, comprising:

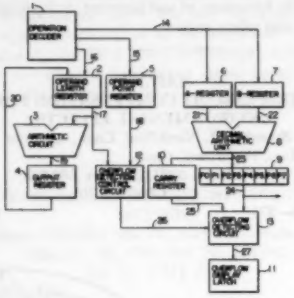
(a) a first register for holding information on the length of an operand which is subjected to an arithmetic operation in said decimal arithmetic unit;

(b) a second register for holding a byte position which constitutes the least significant byte position for the arithmetic operation;

(c) control signal generating means coupled to said first and

second registers for producing a control signal in accordance with contents of said first and second registers; and

(d) overflow detecting means coupled to said decimal arithmetic unit and said control signal generating means for



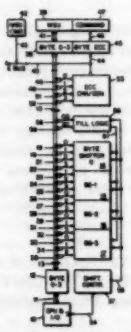
detecting presence of absence of an overflow by checking a value of a particular byte of the output of said decimal arithmetic unit which byte is designated by said control signal.

4,437,166

HIGH SPEED BYTE SHIFTER FOR A BI-DIRECTIONAL DATA BUS

Steven M. O'Brien, Norristown, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Dec. 23, 1980, Ser. No. 219,768
Int. Cl.³ G06F *7/00, 3/04*
U.S. Cl. 364—900 **10 Claims**



8. A method of shifting a plurality of bytes of data on a bi-directional data bus of the type having a plurality of byte lines and input and output registers employing byte shifters of the type having a single buffer register for each byte comprising the steps of:

connecting each byte line of the data bus to a byte shifter of the type having an input port for each byte line,

enabling one of said input ports of each byte shifter,

storing the data byte being presented at the enabled input ports in the buffer register of each of the byte shifters, and

transferring the data bytes in the buffer registers of each of the byte shifters to a byte line of the data bus which is different from the byte line connected to the enabled input port.

4,437,167

MULTIPLE HALF-LINE SPACING ON A MINIATURE PAGE

Kent R. Demke, Austin, and Jerold D. Dwire, Round Rock, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1980, Ser. No. 221,160
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—900 **5 Claims**

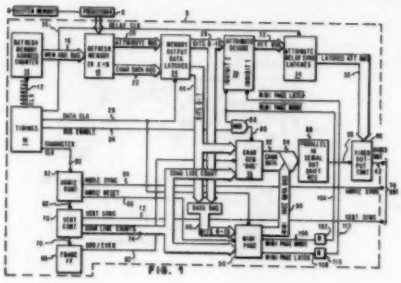


FIG. 4

1. In a processor driven word processing system including interface logic connecting a display, a display memory and a main memory, the improvement in said interface logic comprising:

means for providing for display on the display a video output data stream representative of an entire page of printed text to be produced by the system, said data stream comprising identical miniature character symbol constructs, said identical miniature character symbol constructs comprising a matrix having upper and lower halves said upper half being blank and said lower half being blank or not blank as a function of the value of a bit stored in the display memory indicative of the presence or absence of a character in said main memory; and

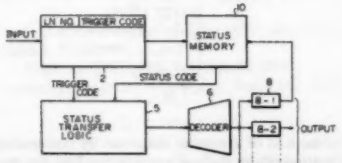
means responsive to a predetermined attribute bit in said display memory for displaying said miniature character symbol constructs with their upper and lower halves reversed for representing a half-line space between sequential lines of printed text or not.

4,437,168

COMMUNICATION CONTROL UNIT

Masahide Yamashita; Hikaru Oku, and Masato Maruyama, all of Yokosuka, Japan, assignors to Nippon Telegraph & Telephone Public Corp. of 1-6, Tokyo, Japan

Filed Jan. 23, 1981, Ser. No. 228,802
Claims priority, application Japan, Feb. 4, 1980, 55-12171
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—900 **14 Claims**



1. A communication control unit connected to a host computer and a plurality of terminals or between two host computers through communication lines including related lines having

interfaces and basic processors for communication control procedures and situations comprising:

(a) a status memory having a plurality of fields for each line, the fields including at least an instantaneous status of the communication lines, information of whether a transmission data link or a reception data link has been established between the host computer and the terminals or between two host computers, a count data of the repetition times of each basic process of the communication control procedures, a predetermined upper limit value of repetition times of each basic process, a transient count data of timer pulse count fields for a timer circuit's checking of predetermined upper limit values for time over check, and predetermined upper limit values for time over check;

(b) a timer circuit for updating the content of the timer pulse count fields in the status memory in every predetermined time period value, and providing trigger data when the content of any one of the timer pulse count fields reaches its own assoicated predetermined upper limit value for time over check in the status memory;

(c) a trigger data registration circuit for storing a set of information, including trigger data comprising a trigger code and a line number, the trigger data being provided from the host computer, the lines or the timer circuit according to the kind of trigger data;

(d) a status transfer logic for providing a predetermined operation code responding to the combination of the present status code in the status memory relating to the line indicated by the line number in the trigger data and the trigger code in the trigger data provided by the trigger data registration circuit;

(e) a memory having a fixed table for decoding the output of the status transfer logic and providing an operation code for each field relating to the status memory; and

(f) a plurality of basic processors operating each basic process of the communication control procedure according to the related field of the operation code provided from the memory having a fixed table and the output of the status memory and providing the outputs which are applied to the status memory, the host computer, and the related line interface, and said plurality of basic processors operating simultaneously with one another.

4,437,169

STAGE LIGHTING CONTROL SYSTEM

David R. Bertenshaw, Chertsey; Edwin P. Lockwood, Brentford, and Anthony R. Brown, London, all of England, assignors to The Rank Organisation Limited, London, England

Filed May 1, 1981, Ser. No. 259,678

Claims priority, application United Kingdom, May 1, 1980, 8014562

Int. Cl.³ G06F *3/05*; H05B *37/02*

U.S. Cl. 364—900 **7 Claims**

1. A stage lighting control system comprising

a main processor unit including a memory for storing information relating to the dimmer levels necessary to produce various lighting effects,

a portable controller having

a multiplicity of dimmer level control elements adjustable to define said information to be stored,

electrical contacts associated with each said control element and whose state is changed by adjustment of said control elements, said contacts being connected in a scanning circuit,

a local processor connected to the scanning circuit and having a memory programmed to cause the local processor cyclically to scan the control element contacts and detect changes of state therein,

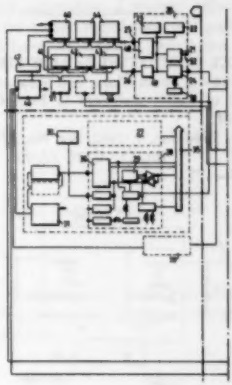
an address memory for storing address data relating to the memory in the main processor unit,

means for selecting address data from the address memory,

means for generating changed state data corresponding to the changed state of the contacts,

a multiplexer connected to said address selecting means and said changed state data generating means for producing a coded signal containing the selected address data and changed state data,

a display unit, and



mode selection means for selecting the writing of data from the portable controller to the memory of the main processor unit and the playback of information from the main processor unit to the display unit, and

a low capacity cable link connecting the main processor unit with the portable controller for the transmission of the coded signal and display information therebetween.

4,437,170

METHOD AND CIRCUIT ARRANGEMENT FOR THE ACCEPTANCE AND TEMPORARY STORAGE OF DATA SIGNALS IN A SWITCHING SYSTEM

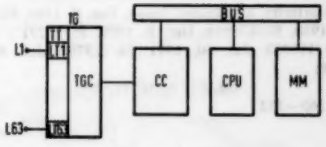
Gerhard Moschitz, Wolfratshausen, and Richard Schoonhoven, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 20, 1981, Ser. No. 284,616

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1980, 3036034

Int. Cl.³ G06F *3/04*

U.S. Cl. 364—900 **10 Claims**



1. A method for the acceptance and temporary storage of data signals supplied via line sections in a data switching system before processing or relaying of said data signals to other line sections, employing a data communication control to which the line sections are connected, said data communication control having a connection memory for storing starting addresses of memory areas, and a memory arrangement which allows memory areas to be made available to the line sections for data signal storage, comprising the steps of

supplying an address to the connection memory, which address is the starting address of the memory area which

is available for the acceptance and temporary storage of data signals supplied by a line section requesting data signal storage; and

in response to the activation of a first memory area, supplying to the data communication control the starting address of the next available memory area allocated for the acceptance and storage of data signals supplied by the next requesting line section.

4,437,171

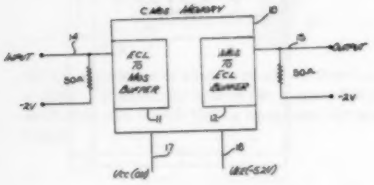
ECL COMPATIBLE CMOS MEMORY

Edwin L. Hudson, Santa Clara, and Stephen L. Smith, Sunnyvale, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jan. 7, 1982, Ser. No. 337,617

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—177 **18 Claims**



1. In a metal-oxide-semiconductor (MOS) circuit, a buffer for receiving a signal from an emitter-coupled-logic (ECL) circuit and for converting said ECL signal to an MOS compatible signal, comprising:

a comparator means for receiving said ECL signal and for comparing it with a predetermined reference potential;

level shifting means, coupled to said comparator means, for shifting the signal level resulting from said comparison;

amplification means for amplifying the signal shifted by said level shifter, said amplification means coupled to said level shifter; and,

reference potential means integral with said MOS circuit for generating said predetermined reference potential,

whereby said ECL signal is converted to an MOS compatible signal.

4,437,172

SEMICONDUCTOR MEMORY DEVICE

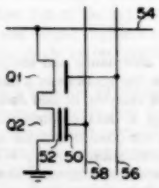
Fujio Masuoka, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 13, 1981, Ser. No. 321,320

Claims priority, application Japan, Dec. 8, 1980, 55/172915; Dec. 8, 1980, 55/172916; Dec. 8, 1980, 55/172917; Dec. 20, 1980, 55/180953; Jul. 30, 1981, 56/119780; Jul. 30, 1981, 56/119781

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—182 **25 Claims**



1. A semiconductor memory device comprising:

a memory cell which has

a semiconductor region of first conductivity type having an impurity region of second conductivity type,

a first conductive layer formed on said semiconductor region with a first insulating film interposed therebetween,

a second conductive layer which is formed on said semiconductor region with a second insulating film interposed therebetween and which has a function of storing data, and

a third conductive layer which is formed on said second conductive layer with a third insulating film interposed therebetween and which is electrically insulated from said first and second conductive layers; and

means for discharging an electron from said second conductive layer by field emission which includes

first means for applying a voltage of high level for erasing data to said first conductive layer to erase the data, and

second means for applying a voltage of low level to said third conductive layer to erase the data.

4,437,173

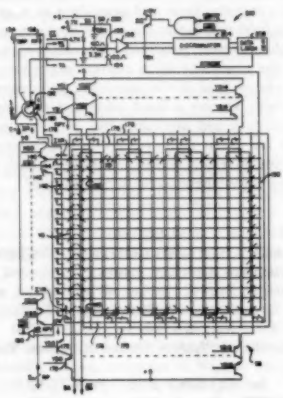
CORE MEMORY CONTROLLED BY AUXILIARY CORE

Jules E. Canel, Granada Hills, and Thomas J. Gilligan, Rolling Hills Estates, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Jul. 16, 1981, Ser. No. 284,133

Int. Cl.³ G11C *7/02*

U.S. Cl. 365—193 **18 Claims**



1. A core memory comprising:

a data storage stack including an array of data storage cores and a timing core coupled to receive substantially the same magnitude of drive current as a selected data storage core;

a timing core sensing circuit coupled to sense the switching signal output of the timing core and generate a feedback switching signal corresponding thereto as the timing core is switched by the drive current;

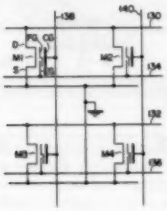
current drive circuitry coupled to drive a selected data storage core and the timing core with currents of sufficient magnitude to switch the cores from one state of magnetization to another in response to current command signals; and

a timing and control circuit responsive to address and data commands and to the feedback switching signal for generating the current command signals required to switch selected data storage cores.

4,437,174
SEMICONDUCTOR MEMORY DEVICE

Fujio Masuoka, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 13, 1981, Ser. No. 320,937
Claims priority, application Japan, Jan. 19, 1981, 56/6172; Jan. 19, 1981, 56/6173
Int. Cl.³ G11C 11/40
U.S. Cl. 365—218 6 Claims



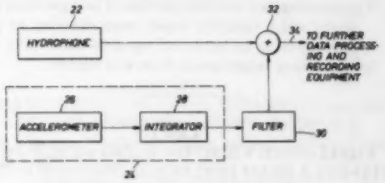
1. A semiconductor memory device comprising:
a memory matrix having a plurality of memory cells arranged in a matrix form, each of said plurality of memory cells including
a semiconductor region of first conductivity type,
a source region and a drain region of second conductivity type,
an erase gate formed on said semiconductor region with a first insulating film interposed between said erase gate and said semiconductor region,
a floating gate which is formed on said semiconductor region with a second insulating film being interposed between said floating gate and said semiconductor region, said floating gate being capable of storing data and overlapping said erase gate, and with a third insulating film being interposed between said floating gate and said erase gate, and
a control gate which is formed on said floating gate with a fourth insulating film being interposed between said control gate and said floating gate and said control gate being insulated from said erase gate and said floating gate;
a row line commonly connected to said control gates of said memory cells of each row of said memory matrix;
a column line commonly connected to said sources or drains of said memory cells of each column of said memory matrix;
an erase line commonly connected to said erase gates of said memory cells of each column of said memory matrix;
first applying means for applying an erase voltage having a high level to said erase gate of said memory cell to erase data from said floating gate thereof, said memory cell being connected to said row line, said column line and said erase line which are selected;
second applying means for applying a voltage of a predetermined level to said selected column line to detect a data erasure condition of said memory cells which is selected;
means for inhibiting supply of said erase voltage when a current flowing through said column line is detected; and
third applying means for applying a voltage of low level to said selected row line when data is erased and when data erasure is detected.

4,437,175
MARINE SEISMIC SYSTEM

Albert J. Berni, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 20, 1981, Ser. No. 323,631
Int. Cl.³ G01V 1/36, 1/38
U.S. Cl. 367—24 10 Claims

1. A method of producing a seismic signal indicative of the substrata beneath a body of water, said method comprising the steps of: supplying acoustic energy to said body of water; sensing at a predetermined depth the pressure wave reflected from said substrata beneath said body of water and the secondary pressure wave caused by a secondary reflection of said pressure wave from the air-water interface and generating a first signal indicative thereof; sensing at said predetermined depth the particle velocity of the water accompanying said pressure wave reflected from said substrata and said secondary pressure wave and generating a second signal indicative thereof; filtering said second signal such that portions of said second signal that have a frequency that is less than a first



frequency are attenuated by said filtering to generate a third signal, said first frequency being less than a second frequency defined by the equation

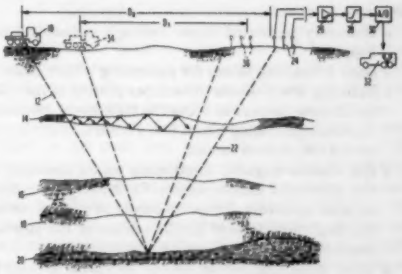
$$f=C/2D$$

where
f: said second frequency,
C: wave propagation velocity for said body of water, and
D: said predetermined depth; and
combining said first and third signals to produce a signal indicative of said substrata beneath said body of water.

4,437,176
METHOD OF OPTIMIZING SIGNAL-TO-NOISE RATIO IN SEISMIC EXPLORATION

Harry Mack, Irving, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,549
Int. Cl.³ G01V 1/36
U.S. Cl. 367—38 3 Claims



1. A method for exploring subterranean structures of the earth having at least one reflection interface which has a broadband acoustic wave reflection attenuation characteristic which varies cyclically with the angle of acoustic wave incidence, comprising the steps of:
(a) transmitting acoustic waves into the earth from a plurality of sources located along the surface of the earth;
(b) detecting reflected acoustic waves from said reflection interface at a plurality of receivers offset from said plurality of sources along the surface of the earth;

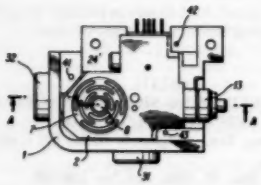
(c) gathering said reflected acoustic waves into groups of selected offset intervals;
(d) determining from said gathered acoustic waves at what incidence angles, with respect to said subterranean interface having said cyclical attenuation characteristic, said acoustic energy is reflected with minimum attenuation;
(e) selecting a portion of said gathered acoustic waves which have offsets from acoustic wave sources to acoustic wave receivers such that the angle of incidence and reflection of the acoustic waves from said interface are substantially equal to the incidence angles at which attenuation of reflection acoustic waves at said interface is minimized;
(f) processing said selection portion of said gathered acoustic waves using common depth point stacking to produce signals having an improved signal-to-noise ratio; and
(g) producing seismograms from said signals.

4,437,177

SMALL-SIZED VIDEO OR AUDIO PICKUP DEVICE HAVING A BEAM DEFLECTOR DISPOSED WITHIN A FOCUSING DEVICE SUPPORT

Akinori Watabe, Yokohama; Susumu Yonezawa, Yokosuka, and Yoshiharu Tanaka, Omiya, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo and Mansei Kogyo Kabushiki Kaisha, Saitama, both of, Japan

Filed Nov. 12, 1980, Ser. No. 206,382
Claims priority, application Japan, Nov. 12, 1979, 54-145462; Nov. 12, 1979, 54-155838[U]
Int. Cl.³ G11B *7/08*
U.S. Cl. 369—45 **26 Claims**



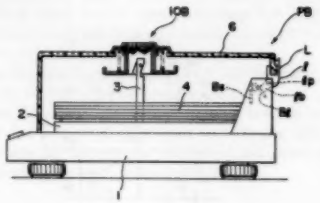
1. A pickup device for use in an apparatus for reading video and/or audio information recorded in an optically readable structure on an information carrier, comprising:
a resiliently supported frame having a cylindrical hollow support,
a beam generating means for generating a light beam,
a focussing lens disposed in an upper portion of the cylindrical hollow support to focus the light beam generated by the beam generating means into a beam spot on the surface of the information carrier,
a first electro-magnetic controlling means arranged under the cylindrical hollow support for moving the cylindrical support upwardly and downwardly to control the size of the beam spot formed on the surface of the information carrier through the focussing lens,
a beam deflecting mirror fixedly mounted on said frame within said cylindrical hollow support independently of said cylindrical hollow support in vertical alignment with the focussing lens between the latter and the first electromagnetic controlling means to deflect the light beam from the beam generating means toward the focussing lens,
a second electro-magnetic controlling means for laterally displacing the frame to control the place of the beam spot on the surface of the information carrier, and
a photo-sensitive detector for converting the returning light beam after reflection at the surface of the information carrier into electrical signals.

4,437,178

RECORD PLAYER

Seizo Miyoshi, Neyagawa, and Bunitsu Yamaguchi, Yawata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 21, 1981, Ser. No. 304,339
Int. Cl.³ G11B *17/04, 25/04*
U.S. Cl. 369—75.1 **15 Claims**



1. A record player comprising:
a main body;
a turntable rotatably mounted on said main body for supporting a record to be played;
a changer spindle extending upwardly from a central portion of said turntable for supporting a stack of records to be lowered one-by-one to said turntable;
a dust cover pivotally mounted to said main body for selective movement between a closed position and an open position; and
means for, when said dust cover is in said closed position thereof, maintaining records supported by said changer spindle in a horizontal alignment, said means comprising an opening formed in a central portion of said dust cover, a record presser member movably mounted in said opening and biased for movement with respect to said dust cover in a direction to press against the upper surface of an uppermost record supported by said changer spindle when said dust cover is in said closed position thereof, and means for enabling vertical movement and for preventing horizontal movement of said presser member with respect to said dust cover, said enabling and preventing means comprising recesses formed in one of said dust cover, said presser member or a member adjacent said dust cover and projections extending from another of said presser member, said dust cover or said member adjacent said dust cover, said projections fitting into said recesses, thereby guiding vertical movement of said presser member with respect to said dust cover and restraining relative horizontal movement therebetween.

4,437,179

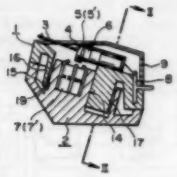
PHONO PICKUP CARTRIDGE

Kazuo Nishikawa; Kiyoshi Sato; Hiroyuki Ichino, and Keniti Okura, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 4, 1981, Ser. No. 270,462
Claims priority, application Japan, Jun. 9, 1980, 55-76694; Jun. 9, 1980, 55-76695
Int. Cl.³ G11B *3/02, 3/44*
U.S. Cl. 369—172 **7 Claims**

1. A phono pickup cartridge comprising: a stylus unit having moving coils, a cantilever coupled to said moving coils, at least three positioning surface members, and a substantially planar tab member substantially perpendicular to said positioning surface members, a first of said positioning surface members being forward of said moving coils and a second and a third of said positioning surface members being behind said moving coils, said first positioning surface being perpendicular to said cantilever, and said second and third positioning surfaces being parallel to said cantilever; and a cartridge body having at least

three lateral exterior positioning surfaces and a substantially planar upper surface perpendicular to said lateral surface, said three positioning surface members being in resilient contact with corresponding ones of said positioning surfaces of said cartridge body when said stylus unit is mounted on said cartridge body, a mounting position of said stylus unit on said cartridge body being entirely determined by positions of engagement of said positioning surface members with said corresponding ones of said positioning surfaces and said tab member with said upper surface.



4,437,180

APPARATUS FOR CONTROLLING PICKUP ARM IN RECORD OR VIDEO DISK PLAYER

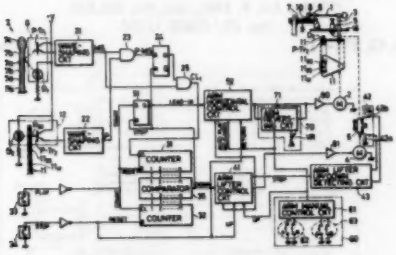
Atsushi Takeuchi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Dec. 8, 1981, Ser. No. 328,517

Claims priority, application Japan, Dec. 24, 1980, 55-182140

Int. Cl.³ G11B *17/06, 17/00*

U.S. Cl. 369—217 **23 Claims**



1. A pickup arm controlling apparatus for an audio record or a video disk player, comprising:

lead-in position detecting means for detecting a non-recorded portion of a disk onto which a stylus is to descend during a movement of a pickup arm toward the center of said disk;

reproduction-start operating means for providing an operating signal;

pickup arm horizontal controlling means for outputting a lead-in command signal in response to the receipt of an operating signal from the reproduction-start operating means, said lead-in command signal being ceased to be outputted upon receipt of a detection signal from said lead-in position detecting means;

pickup arm lifter controlling means for causing a pickup arm lifter to descend from an uplifted position to a lowered position upon receipt of said detection signal from said lead-in position detecting means to thereby lower said stylus onto said disk;

pickup arm reversing controlling means for outputting, for a preset length of time after a cease of said lead-in command signal delivered from said pickup arm horizontal controlling means, a pickup arm reversing command signal; and

pickup arm horizontal driving means for horizontally driving said pickup arm in a first direction upon receipt of an output from said pickup arm horizontal controlling means and in the opposite direction upon receipt of an output from said pickup arm reversing controlling means, wherein said preset length of time corresponds to the amount of time necessary to drive the pickup arm in the opposite direction to compensate for the pickup arm overrunning said non-recorded portion on the disk after the cessation of the lead-in command signal.

4,437,181

AUTOMATIC RECORD PLAYING APPARATUS HAVING A TONE ARM POSITION DETECTING DEVICE

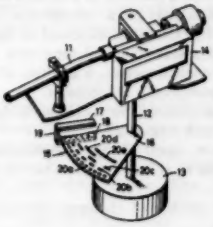
Yukihiro Kishima, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Japan

Filed Aug. 26, 1980, Ser. No. 182,407

Claims priority, application Japan, Aug. 27, 1979, 54-117781[U]; Aug. 27, 1979, 54-117782[U]

Int. Cl.³ G11B *3/06*

U.S. Cl. 369—244 **6 Claims**



1. A record disc playing apparatus having a tone arm position detecting device comprising:

(a) a code part;

(b) a position detection part comprising a group of optical reading elements disposed at spaced intervals with respect to each other, one of the code part and the position detection part being mounted for movement through a plurality of positions as a function of the position of the tone arm as the tone arm moves between the periphery and the center of the record disc, and scanning the other to detect the position of the tone arm with respect to the apparatus;

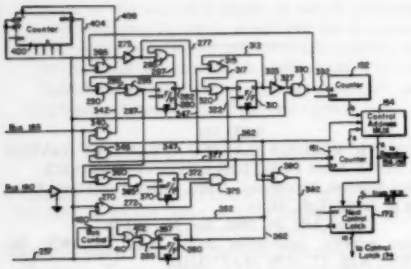
(c) a plurality of rows of slots of various length length provided on the code part, said code part being unevenly divided in the direction of scanning to form short and long division, the short and long divisions conveying information specifying an address, said address indicating the position of the tone arm with a combination of existence and non-existence of the slots of various length along each row of said short and long divisions, the short divisions being defined by offsetting ends of at least two of said rows of slots of various length and disposed between said ends at spaced positions with respect to each other in the direction of the scanning, said short divisions being located on the code part corresponding respectively to particular positions of the tone arm, said rows of slots of various length of the short and long divisions being aligned to said optical reading elements to be exposed thereto as the tone arm moves; and

(d) an encoder producing binary address codes in response to outputs from said position detection part.

4,437,182
METHOD AND APPARATUS FOR INTERLEAVING CONTROL SIGNALS

David A. Lambert, New Fairfield, and Gary A. Profet, Watertown, both of Conn., assignors to General DataComm Industries, Inc., Danbury, Conn.

Filed Jan. 12, 1981, Ser. No. 224,337
Int. Cl.³ H04J 3/12
U.S. Cl. 370—110.1 20 Claims



1. In a time division multiplexer for multiplexing data and control signals from a plurality of channels so as to produce a single stream of signals on a transmission line, said stream having a first set of time slots allocated to the transmission of data signals and a second set of time slots allocated to the transmission of control signals, a method of transmitting the control signals comprising the steps of:

monitoring the channels for a change in the control signals associated with a channel,

when a control signal changes, transmitting the changed control signal in at least one time slot in the second set of time slots,

counting the number of changed control signals that are transmitted,

after a specified number of changed control signals are transmitted, transmitting at least one of the control signals associated with one of said channels without regard to whether there has been any change in the control signals associated with said one of said channels,

repeating the steps of monitoring the channels, transmitting the changed control signal and counting the number of changed control signals that are transmitted, and

after a specified number of changed control signals are transmitted, transmitting at least one of the control signals associated with a different one of said channels without regard to whether there has been any change in the control signals associated with said different one of said channels.

4,437,183
METHOD AND APPARATUS FOR DISTRIBUTING CONTROL SIGNALS

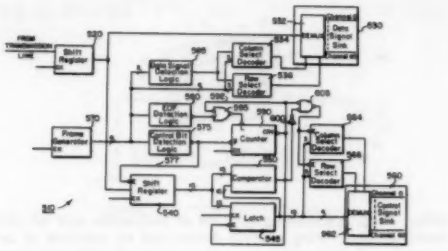
Gary A. Profet, Watertown, Conn., assignor to General DataComm Industries, Inc., Danbury, Conn.

Filed Jan. 12, 1981, Ser. No. 224,340
Int. Cl.³ H04J 3/12
U.S. Cl. 370—110.1 10 Claims

1. In a bit-interleaved time division multiplexer for multiplexing data and control signals from a plurality of individual data channels so as to produce a single stream of signals on an aggregate transmission line, said multiplexer including a frame generator which generates select signals that are used to select for transmission either data from individual data channels or overhead signals including control signals, a method of transmitting control signals associated with individual data channels comprising the steps of:

storing at a transmitter a control signal for a channel together with an address for said channel,

generating at said transmitter a sequence of select signals that are used to select for transmission either data signals or overhead signals, the select signals for the transmission



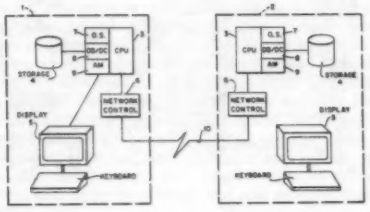
of control signals associated with individual data channels (hereinafter CONTROL select signals) being distributed throughout said sequence, and

responsive to each CONTROL select signal, transmitting one bit of the stored control signal and its address.

4,437,184
METHOD OF TESTING A DATA COMMUNICATION SYSTEM

Robin M. S. Cork, Winchester, England, and David B. Rose, Raleigh, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 9, 1981, Ser. No. 281,814
Int. Cl.³ G06F 11/34
U.S. Cl. 371—19 3 Claims



1. A method of testing the implementation of any defined portion of a data communication system, said system having a computational model thereof constructed in a high level computing language and said model having been compiled to produce an executable machine language program and said communications system also including an element for logging trace files of messages sent or received over said system, said method comprising the steps of:

running an application program that requires the use of the elements of said defined portion in said communications system to be tested;

monitoring and logging messages sent and received by said defined portion of said data communications system during the running of said application program, said logging constructing trace files for logging in said element in said system, each message having been constructed to have a format determined by said defined portion of said communications system;

extracting relevant message related information from said trace file and using said extracted message related information as input data for said executable machine language program;

executing said machine language program, the results of said execution indicating whether said messages were constructed correctly according to said communications system requirements over said defined portion thereof.

4,437,185

METHOD OF ERROR CORRECTION

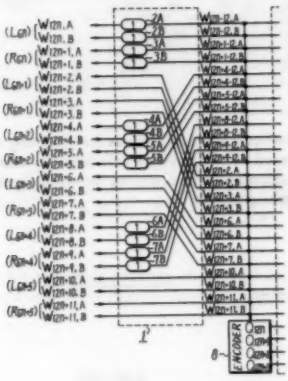
Yoichiro Sako, and Kentaro Odaka, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

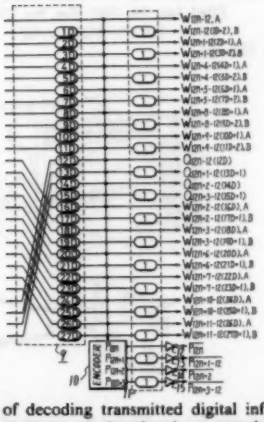
Filed Jun. 16, 1981, Ser. No. 274,262

Claims priority, application Japan, Jun. 20, 1980, 55-84425

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—39 **11 Claims**





1. A method of decoding transmitted digital information signals to correct errors occurring therein as a result of transmission, wherein said information signals are received as blocks of interleaved digital data word signals and are applied to a first decoder as first error-correcting blocks comprised of a plurality of information word signals, a series of first check word signals associated with said plurality of information word signals, and a series of second check word signals associated with said plurality of information word signals, said information word signals, said first check word signals and said second check word signals being interleaved, comprising the steps of:

decoding the received digital data word signals in said first decoder and correcting the decoded digital information word signals and said first check word signals by generating error syndromes using said second check word signals, the corrected and decoded digital information word signals forming a block of interleaved word signals;

tagging a pointer code signal to each of said information word signals of the block of interleaved word signals to represent whether an uncorrected error remains in such word signals;

delaying the tagged interleaved word signals of each such block of tagged interleaved word signals in a deinterleaving stage by respective different amounts so as to deinterleave such tagged interleaved word signals into a different arranging order, thereby providing a second error-correcting block;

decoding the digital information word signals of each such second error-correcting block in a second decoder by generating error syndromes using said first check word signals, while, if at least one such word signal is determined to be erroneous, correcting at least one such erroneous word signal by said syndromes and said first check word signals, then comparing, for each said second error-correcting block in which at least one word signal is determined to be erroneous, the number of erroneous word signals as indicated by said pointer code signals with a predetermined value and, if such number is less than said value, clearing the pointer code signals associated with the corrected erroneous word signals, but, if such number exceeds such value, leaving such pointer code signals uncleared; and

thereafter compensating any uncorrected erroneous word signals as determined by said pointer code signals.

4,437,186

WASTE GAS APPARATUS FOR ELECTRIC FURNACE

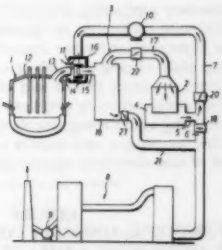
Kunihiro Inai, Takarazuka, Japan, assignor to Nikko Industry Co., Ltd., Hyogo, Japan

Filed Mar. 29, 1982, Ser. No. 362,989

Claims priority, application Japan, Nov. 21, 1981, 56-175269[U]

Int. Cl.³ F27D *7/00*

U.S. Cl. 373—9 **6 Claims**



1. A waste gas recycling apparatus for an electric furnace comprising:

a heat storage chamber;

a preheater bucket charged with scrap;

a first duct positioned between said electric furnace and said heat storage chamber;

a second duct connected from said heat storage chamber to said preheater bucket;

a recycling duct connected between said preheater bucket and said first duct; and

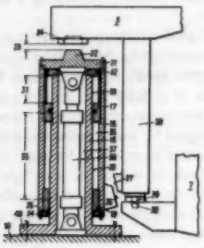
an air inlet located at the juncture of said recycling duct and said first duct and so arranged that hot waste gas from said furnace and recycled gas from said preheater bucket are mixed with air and fed through said first duct to said heat storage chamber.

4,437,187

ELECTRIC FURNACE ARRANGEMENT

Ernst Riegler, Enns, and Ernst Zajicek, Ottensheim, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Sep. 24, 1982, Ser. No. 423,223
Claims priority, application Austria, Oct. 9, 1981, 4348/81
Int. Cl.³ F27D 1/18
U.S. Cl. 373—73 6 Claims



1. In an electric furnace arrangement, such as an electric arc furnace, a plasma melting furnace and the like, and of the type including a furnace cover, a furnace cover carrying structure, and a lifting structure for raising and lowering said furnace cover relative to said furnace, said lifting structure comprising

a stationary supporting post,

a lifting means arranged within said stationary supporting post,

a lifting column engageable with and disengageable from said furance cover carrying structure, said lifting column being vertically displaceable by operation of said lifting means, and

an upper bearing means and a lower bearing means for guiding said lifting column on said stationary supporting post, the improvement wherein

said lifting column is hollow and said stationary supporting post is arranged within and peripherally surrounded by said lifting column, whereby said lifting column and said stationary supporting post are telescopingly displaceable relative to each other by operation of said lifting means, the improvement further comprising

a head plate closing said lifting column on an upper end thereof, an upper end of said lifting means being articulately connected with said head plate and a lower end of said lifting means being articulately connected with one of a base supporting said furance arrangement and a lower end of said stationary support post.

4,437,188

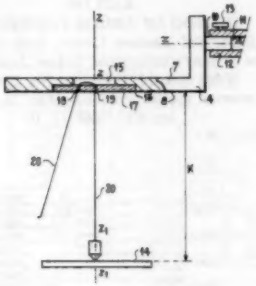
X-RAY EMITTING ASSEMBLY COMPRISING A FLANGE FOR ASSEMBLING A SHEATH ASSEMBLY AND A BEAM LIMITING DEVICE

Marcel Le Sonn, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 3, 1982, Ser. No. 374,408
Claims priority, application France, May 8, 1981, 81 09229
Int. Cl.³ G21K 1/00, 1/02, 5/10
U.S. Cl. 378—205 14 Claims

1. In an X-ray emitting assembly, comprising a flange for assembling a sheath assembly and a beam limiting device, operationally associated with one or more radiation detectors situated in a radiology equipment stand, said flange is adapted to cooperate with alignment means, so as to determine in a first stage, the positioning of said flange with respect to the operating axis of one of the radiation detectors and, in a second stage, to enable alignment along this axis of the operating axes of the sheath assembly and of the beam limiting device; said sheath assembly and said beam limiting device are fixed to said flange, independently of each other;

said flange is a bracket adjustable in position; and said



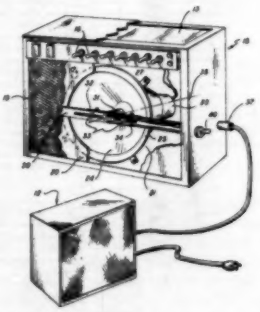
bracket comprises a recess for receiving in a first phase a leaded washer having a hole centrally therethrough and in a second phase a centering means integral with said beam limiting device.

4,437,189

SOUND SYSTEM FOR A MUSICAL INSTRUMENT

Richard L. Newman, Kline Rd., Pennellville, N.Y. 13132

Filed Jun. 26, 1981, Ser. No. 277,997
Int. Cl.³ H04R 1/02
U.S. Cl. 381—91 12 Claims



1. Apparatus for amplifying the sound of a musical instrument that includes

a speaker that is arranged to be wired to the amplifier of a musical instrument which contains a drive section and an output cone wherein one end of the cone forms the mouth of the speaker,

a mounting bar attached to the mouth of the speaker so that the axis of the bar is aligned along one diameter of the cone,

a microphone supported in the mounting bar with the body of the microphone extending rearwardly into the cone so that it is substantially enclosed therein, and

connecting means for attaching the microphone to a public address system.

4,437,190

DEVICE FOR SWITCHING SIGNALS BY OPTICAL MEANS AND AUTOMATIC SWITCHING UNITS COMPRISING SAID DEVICE

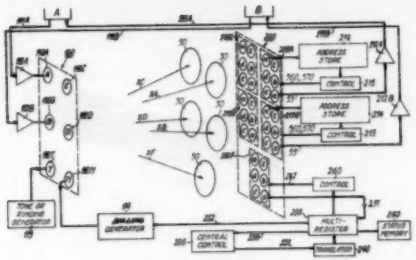
Boris Rosenwaig, 17, Place d'Orion, Meudon-La-Foret, France (92360), and Yves J. Robin-Champigneul, 4, Rue Georges Ville, Paris, France (75116)

PCT No. PCT/FR79/00102, § 371 Date Jul. 8, 1980, § 102(e) Date Jul. 8, 1980, PCT Pub. No. WO80/01028, PCT Pub. Date May 15, 1980

PCT Filed Nov. 8, 1979, Ser. No. 196,083

Int. Cl.³ H04B 9/00

U.S. Cl. 455—600 **16 Claims**



1. A device for switching optically modulated signals conveyed by at least one link of N input links towards at least one link of P output links, where N and P are integers greater than one which may be the same or different, comprising:

a transmit board including N optical sources each associated with a designated input link for delivering an optical signal reproducing the modulations of the signal delivered by said input link,

a receive board including P optical receivers, each associated with a designated output link for supplying the output link a signal reproducing the modulations of optical flux incident thereon,

optical means for projecting the image of the transmit board on each optical receiver,

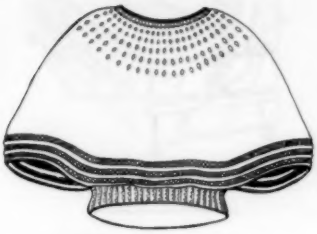
each of said receivers comprising (a) an array of at least N optical receptor cells having positions respectively conjugated with the positions of the optical sources of the transmit board by means of the optical projection means and (b) switching means for selectively transmitting to the output link associated with said optical receiver signals delivered by each of said receptor cells,

the transmit board including at least one supplemental reference optical source,

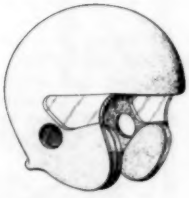
each optical receiver of the receive board being coupled to a supplemental reference receptor cell exposed to optical flux from said reference source,

the receive board including means for adjusting at least one of (a) the position of each optical receiver and (b) the position of the optical projection means in such a manner that the reference cell coupled with the said optical receiver derives a signal of optimum level.

272,959
SWEATER OR SIMILAR ARTICLE
Eloise Waite, P.O. Box 72, Marshall, N.C. 28753, assignor to Eloise Waite, Marshall, N.C.
Filed Nov. 26, 1980, Ser. No. 210,835
U.S. Cl. D2—44

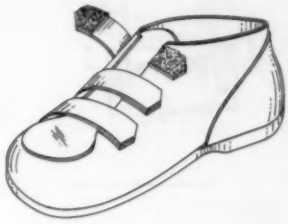


272,960
ATHLETIC HELMET OR SIMILAR ARTICLE
Paul S. Vinson, 3170 Avant Rd., Macon, Ga. 31206
Filed Jul. 28, 1980, Ser. No. 172,712
U.S. Cl. D2—231



272,961
BABY SHOE
Richard N. Clarvit, 10798 SW. 51st Dr., Miami, Fla. 33165
Division of Ser. No. 113,033, Jan. 17, 1980, Pat. No. 267,441, which is a continuation-in-part of Ser. No. 99,602, Dec. 3, 1979, which is a continuation-in-part of Ser. No. 810,584, Jun. 27, 1977. This application Nov. 16, 1981, Ser. No. 322,046
U.S. Cl. D2—278

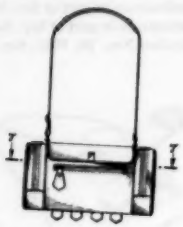
272,962
BABY SHOE
Richard N. Clarvit, 10798 SW. 51st Dr., Miami, Fla. 33165
Division of Ser. No. 113,033, Jan. 17, 1980, Pat. No. Des. 267,441, which is a continuation-in-part of Ser. No. 99,602, Dec. 3, 1979, which is a continuation-in-part of Ser. No. 810,584, Jun. 27, 1977. This application Nov. 16, 1981, Ser. No. 322,048
U.S. Cl. D2—278



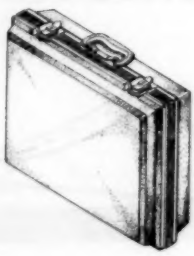
272,963
SHOE
Roberto Muller, 370 E. 76th St., New York, N.Y. 10021, and Antonio M. Sousa, 183 Highland St., Taunton, Mass. 02780
Filed Oct. 3, 1979, Ser. No. 81,522
U.S. Cl. D2—310

272,964
HIGH CUT ATHLETIC SHOE
Roberto Muller Feigelstock, Scarsdale, N.Y., assignor to Pony International, Inc., Secaucus, N.J.
Filed Jun. 17, 1982, Ser. No. 389,334
U.S. Cl. D2—310

272,965
CAMERA BAG
Lawrence A. Simon, 7022 Kildare Rd., Montreal, Quebec, Canada H4W 1B9
Filed Mar. 29, 1982, Ser. No. 362,882
U.S. Cl. D3—33

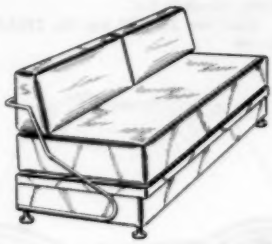


272,966
CARRYING CASE
William W. Ward, Clayton, N.C., assignor to Southern Case, Inc., Raleigh, N.C.
Filed May 3, 1982, Ser. No. 374,249
U.S. Cl. D3—76

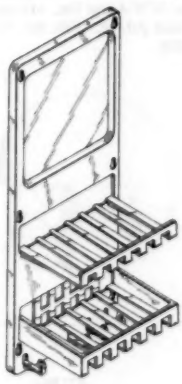


272,967
DINING CHAIR
Arthur Umanoff, Ardsley, N.Y., assignor to Contemporary Shells Inc., New York, N.Y.
Filed Nov. 18, 1980, Ser. No. 207,989
U.S. Cl. D6—56

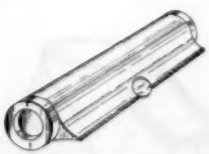
272,968
CONVERTIBLE SOFA
Igal Fairaizen, 58 Eilat Rd., Tel Aviv, Israel
Filed Feb. 13, 1981, Ser. No. 234,552
U.S. Cl. D6—61



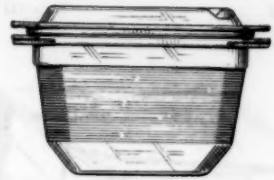
272,969
HOLDER FOR TOILETRY ITEMS
Howard Sussman, 3101 NW. 25th Ave., Pompano Beach, Fla. 33060
Filed Feb. 10, 1983, Ser. No. 443,150
U.S. Cl. D6—86

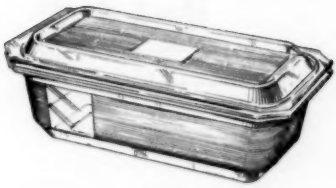


272,970
DISPENSER FOR SHEET MATERIAL
Hideaki Hasegawa; Saburo Shibano, and Terutoshi Kaneko, all of Tokyo, Japan, assignors to Riken Vinyl Kogyo Kabushiki Kaisha, Japan
Filed Jun. 10, 1981, Ser. No. 272,395
U.S. Cl. D6—96

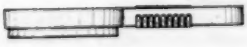


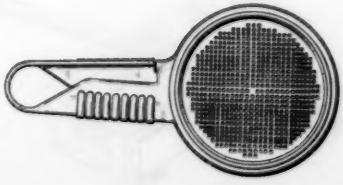
272,971
FOOD CONTAINER
Roger Tallon, Paris, France, assignor to Cidelcem, Paris, France
Filed Apr. 6, 1981, Ser. No. 251,130
Claims priority, application France, Oct. 9, 1980, 80 3139
U.S. Cl. D7—16



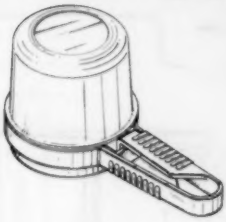


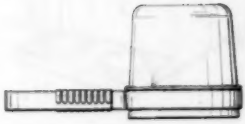
272,972
SIFTER OR THE LIKE
Pieter K. J. De Coster, Aalst, Belgium, assignor to Dart Industries Inc., Northbrook, Ill.
Filed Aug. 3, 1981, Ser. No. 289,421
U.S. Cl. D7—47

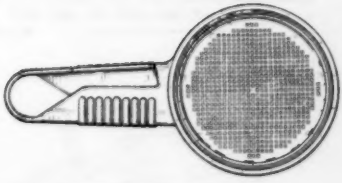




272,973
COMBINED SIFTER AND CONTAINER OR THE LIKE
Pieter K. J. De Coster, Aalst, Belgium, assignor to Dart Industries Inc., Northbrook, Ill.
Filed Aug. 3, 1981, Ser. No. 289,423
U.S. Cl. D7—47

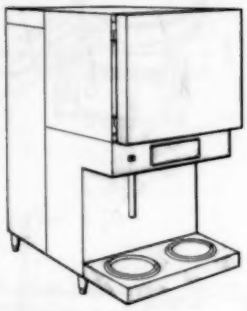




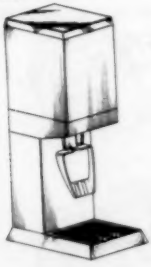


272,974
HANDLE FOR COVERS OF COOKING UTENSILS
Theophil Ryser, Beckenried, Switzerland, assignor to AMC International Alfa Metalcraft Corporation AG, Rotkreuz, Switzerland
Filed May 28, 1980, Ser. No. 154,159
U.S. Cl. D7—394

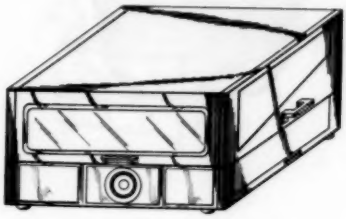
272,975
COFFEE DISPENSER
Gordon R. Miller, Glenview, Ill., assignor to American Metal Ware Co., Ill.
Filed Jan. 29, 1982, Ser. No. 344,192
U.S. Cl. D7—309



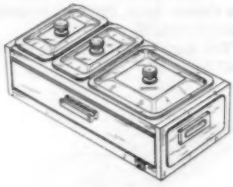
272,976
BEVERAGE DISPENSER
Edward J. LaLumiere, Woburn, Mass., assignor to Jet Spray Corp., Norwood, Mass.
Filed Dec. 28, 1981, Ser. No. 334,874
U.S. Cl. D7—311

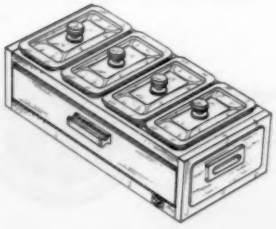


272,977
BACON GRILL
Johannes F. Erkelenz, Seoul, Rep. of Korea, assignor to Top-Qua & Company Ltd., Hong Kong, Hong Kong
Filed Jul. 6, 1981, Ser. No. 280,774
Claims priority, application United Kingdom, Feb. 23, 1981, 999047
U.S. Cl. D7—350

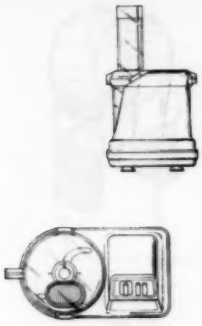


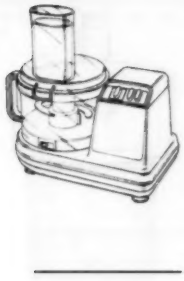
272,978
BUFFET SERVER
Dan E. Gremponrez, West Bend, Wis., and David L. Painter, Glenview, Ill., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Jul. 6, 1981, Ser. No. 280,566
U.S. Cl. D7—357





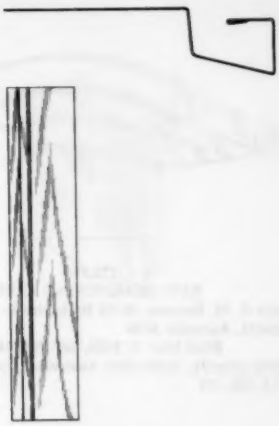
272,979
FOOD PROCESSOR
Tsugio Akita, Osaka, and Shinichi Nagayama, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 19, 1981, Ser. No. 312,475
Claims priority, application Japan, Apr. 24, 1981, 56-17921
U.S. Cl. D7—384



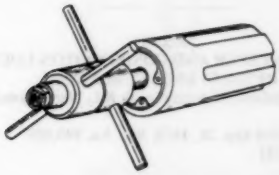


272,980
SICKLE GUARD STRAIGHTENING HAND TOOL
John M. Kapphahn, Rte. 1, Elbow Lake, Minn. 56511
Filed Jul. 20, 1981, Ser. No. 285,025
U.S. Cl. D8—14

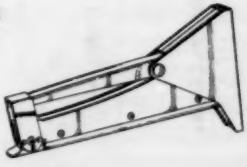
272,981
SPRAY PAINT SHIELD
Andrew C. Justice, 6320 Macleay Rd. SE., Salem, Oreg. 97301
Filed Feb. 12, 1982, Ser. No. 348,342
U.S. Cl. D8—16



272,982
TORQUE WRENCH
Frank J. Rizzo, 16 Waverly St., Everett, Mass. 02149, and Bruce M. Smith, 11 Meadowbrook Rd., Dover, Mass. 02030
Filed Mar. 13, 1981, Ser. No. 243,590
U.S. Cl. D8—24

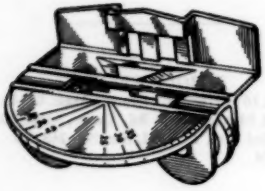


272,983
TACKER
Howard W. Biddle, Histon, England, assignor to Ofrex Group Limited, London, England
Filed Oct. 14, 1980, Ser. No. 197,013
Claims priority, application United Kingdom, Mar. 14, 1980, 80994464
U.S. Cl. D8—51

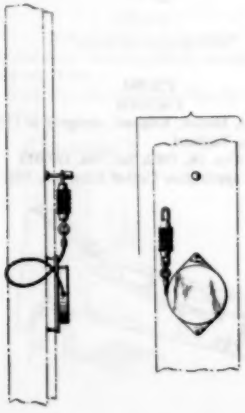


272,984
SMALL HEADED CABLE CUTTER
Frank E. Shaffer, 33 Beach Dr., Newport Beach, Calif. 92660
Continuation-in-part of Ser. No. 944,926, Sep. 22, 1978, Pat. No. Des. 260,132. This application Apr. 20, 1981, Ser. No. 255,896
U.S. Cl. D8—52

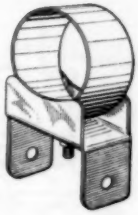
272,985
SAW SHARPENING GUIDE
Cornelis J. M. Beerens, 40-42 Berkshire Rd., North Sunshine, Victoria, Australia 3020
Filed Mar. 4, 1981, Ser. No. 240,463
Claims priority, application Australia, Sep. 9, 1980, 81985
U.S. Cl. D8—71



272,986
COMBINED KEEPER AND COMBINATION LOCK WITH RETRACTABLE CABLE UNIT
Joseph T. DeStefano, 12 Squawbrook Rd., North Haledon, N.J. 07508
Filed Sep. 25, 1978, Ser. No. 945,689
U.S. Cl. D8—331



272,987
RAIL SUPPORT FITTING FOR A DOUBLE POST, RAIL FENCE UNIT OR THE LIKE
John Allen, 5897 Avenue Juan Bautista, Riverside, Calif. 92509
Filed Mar. 6, 1981, Ser. No. 241,134
U.S. Cl. D8—354



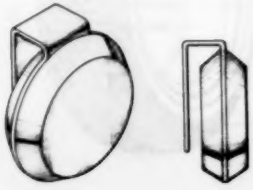
272,988
COMBINED CONTAINER AND PUMP
Robert Podall, Riverwoods, and Henry Robertz, Chicago, both of Ill., assignors to Jovan, Inc., Chicago, Ill.
Filed Nov. 12, 1981, Ser. No. 320,444
U.S. Cl. D9—300

272,989
BOTTLE
Vittorio Moretti, Via Cavour 3, Erbusco (Brescia), Italy
Filed Jun. 11, 1981, Ser. No. 272,758
Claims priority, application Italy, May 27, 1981, 6990/81[U]
U.S. Cl. D9—349

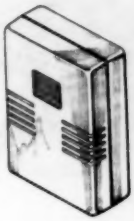
272,990
BOTTLE
Gordon A. Strand, Waterville, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Aug. 30, 1982, Ser. No. 305,436
U.S. Cl. D9—355

272,991
COMBINED BOTTLE AND CAP
Donald V. R. Thompson, New York, N.Y., assignor to Newburgh Cosmetic Packaging Corporation, Newburgh, N.Y.
Filed Oct. 14, 1980, Ser. No. 196,337
U.S. Cl. D9—377

272,992
ELECTRONIC INTRUSION ALARM TRANSMITTER
Ka W. Wong, Ngau Tau Kok, China, and Albert K. H. Au, Wanchai, Hong Kong, assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 30, 1981, Ser. No. 335,969
U.S. Cl. D10—106

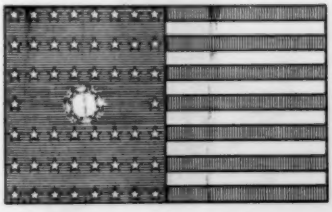


272,993
PORTABLE CABINET DOOR ALARM
Chung K. Chan, Hong Kong, Hong Kong, assignor to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 30, 1981, Ser. No. 335,970
U.S. Cl. D10—106



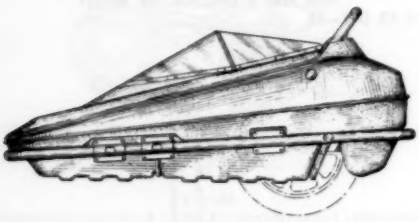
272,994
PIERCED EARRING FINDING
Frank Serapigiia, 69 Russe St., Cranston, R.I. 02910
Filed Mar. 8, 1982, Ser. No. 356,191
U.S. Cl. D11—86

272,995
FLAG
Leroy C. Jones, P.O. Box 20142, Los Angeles, Calif. 90006
Filed Jul. 7, 1980, Ser. No. 166,135
U.S. Cl. D11—180



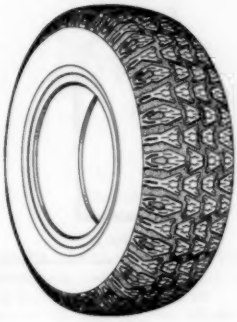
272,996
VEHICLE TRAILER
Thomas M. Trabue, Rte. 2, Box 51, White Bluff, Tenn. 37187, and Augusto Villalon, 1804 SE. 13 Ter., Cape Coral, Fla. 33904
Filed Apr. 20, 1981, Ser. No. 255,385
U.S. Cl. D12—102

272,997
MOTORCYCLE SIDECAR
Duane L. Anderson, Grover City; Robert S. Clarke, Arroyo Grande, and Lewis R. Morris, Grover City, all of Calif., assignors to First Champaign Corporation, Rantoul, Ill.
Filed May 8, 1981, Ser. No. 262,203
U.S. Cl. D12—116



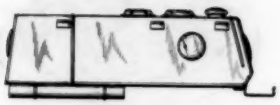
272,998
VEHICLE TIRE
Kenji Takehara, Amagasaki, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Aug. 26, 1981, Ser. No. 296,249
Claims priority, application Japan, Feb. 26, 1981, 56-7835
U.S. Cl. D12—146

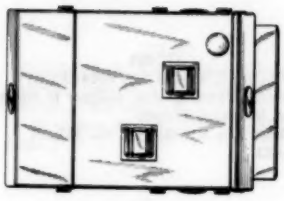
272,999
VEHICLE TIRE
Hideaki Nagayasu, Kakogawa, Japan, assignor to Sumitomo Rubber Industries Limited, Kobe, Japan
Filed Jan. 8, 1982, Ser. No. 337,997
Claims priority, application Japan, Jul. 8, 1981, Sho-56-30126
U.S. Cl. D12—146



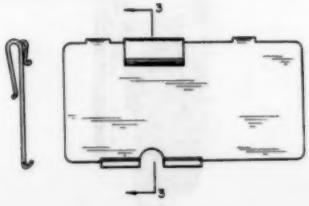
273,000
VEHICLE TIRE
Kenji Takehara, Amagasaki, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Nov. 4, 1981, Ser. No. 318,196
Claims priority, application Japan, May 6, 1981, Sho 56-19513
U.S. Cl. D12—147

273,001
VEHICLE MOUNTED CAMPER UNIT
Alexander Fink, 80 Dogwood Rd., Boonton, N.J. 07005
Filed Dec. 14, 1981, Ser. No. 330,463
U.S. Cl. D12—156



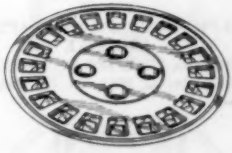


273,002
NOTE CLIPBOARD FOR AN AUTOMOBILE VISOR
Edward R. Schafer, 13023 Lockmoor Dr., Grand Blanc, Mich. 48439
Filed Jul. 31, 1981, Ser. No. 288,854
U.S. Cl. D12—191

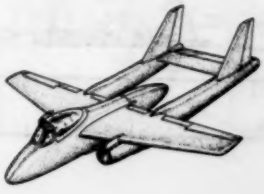


273,003
VEHICLE WHEEL
Ulf K. Svanbäck, Lilla Edet, Sweden, assignor to Saab-Scania Aktiebolag, Trollhattan, Sweden
Filed Sep. 17, 1981, Ser. No. 303,029
Claims priority, application Sweden, Mar. 26, 1981, 81-0779
U.S. Cl. D12—211

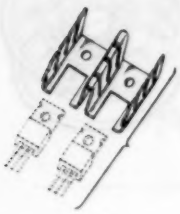
273,004
WHEEL COVER
Björn E. A. Envall, Vänersborg, Sweden, assignor to Saab-Scania Aktiebolag, Trollhattan, Sweden
Filed Dec. 30, 1981, Ser. No. 335,803
Claims priority, application Sweden, Jun. 30, 1981, 81-1494
U.S. Cl. D12—211



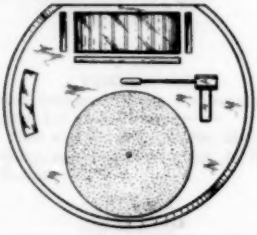
273,005
AIRCRAFT
Jean McComas, West Babylon, N.Y., assignor to Fairchild Industries, Inc., Germantown, Md.
Filed Mar. 19, 1981, Ser. No. 245,554
U.S. Cl. D12—335

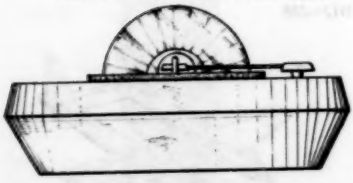


273,006
TWIN HEAT SINK FOR ELECTRONIC SEMICONDUCTOR DEVICES
Alfred F. McCarthy, Belmount, N.H., assignor to Aavid Engineering, Inc., Laconia, N.H.
Filed Apr. 8, 1981, Ser. No. 252,029
U.S. Cl. D13—23

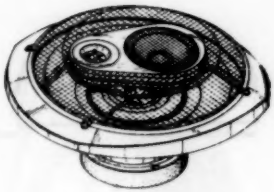


273,007
COMBINED PHONOGRAPH AND TAPE PLAYER OR THE LIKE
Marianne Spottswood, 249 E. 48th St., New York, N.Y. 10017
Filed May 22, 1981, Ser. No. 266,680
U.S. Cl. D14—5

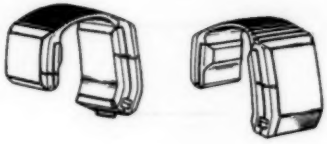




273,008
SPEAKER
Hideaki Ishizaki, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Sep. 24, 1981, Ser. No. 305,243
Claims priority, application Japan, Apr. 1, 1981, 56-13708[U]
U.S. Cl. D14—30

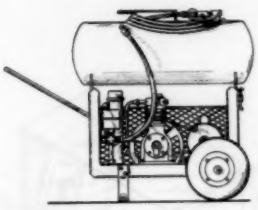


273,009
TACTILE ALERTING BRACELET
Robert B. Isaacs, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Feb. 8, 1982, Ser. No. 347,231
U.S. Cl. D14—52

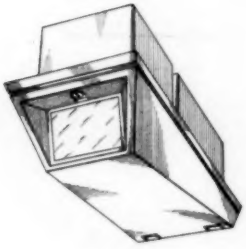


273,010
PORTABLE RADIO
Masanori Hamada; Yoshiyuki Saigo; Etsuko Ichino, all of Osaka, and Takao Okada, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 19, 1981, Ser. No. 313,013
Claims priority, application Japan, Apr. 20, 1981, 56-17007[U]
U.S. Cl. D14—68

273,011
PORTABLE AIR COMPRESSOR
Wayne C. Dudley, Parkersburg, Iowa 50665
Filed Jul. 15, 1981, Ser. No. 259,831
U.S. Cl. D15—9

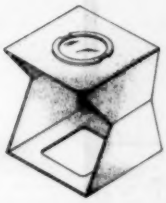


273,012
SURVEILLANCE CAMERA HOUSING
Edward Kozloski, Babylon Village, N.Y., assignor to Vicon Industries, Inc., Plainview, N.Y.
Filed Nov. 27, 1981, Ser. No. 325,488
U.S. Cl. D16—2



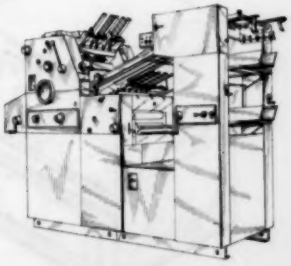
273,013
ELECTRIC FLASH UNIT
Yoshiyuki Takematsu, Tokyo, Japan, assignor to Fuji Koeko Corporation, Tokyo, Japan, a part interest
Filed Nov. 20, 1981, Ser. No. 323,473
Claims priority, application Japan, May 20, 1981, 56-021638
U.S. Cl, D16—42

273,014
LINEN TESTER
Benjamin A. Cuoco, 315 Prospect St., East Longmeadow, Mass. 01028
Filed May 11, 1981, Ser. No. 262,784
U.S. Cl. D16—135



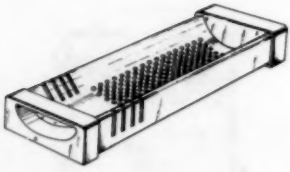
273,015
ORGAN
Thomas E. Kimble, Covington, Ky., assignor to Baldwin Piano & Organ Company, Cincinnati, Ohio
Filed Jun. 15, 1981, Ser. No. 273,462
U.S. Cl. D17—5

273,016
PRINTING MACHINE
Etsuo Hiraishi, Hiroshima, and Takeshi Shohoji, Chiba, both of Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Jul. 9, 1982, Ser. No. 396,549
Claims priority, application Japan, Jan. 12, 1982, 57-823
U.S. Cl. D18—13

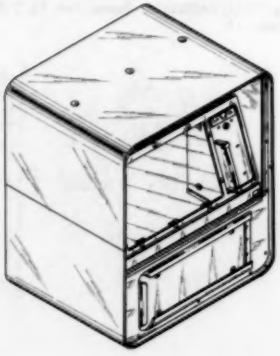


273,017
WRITING INSTRUMENT
Pierre Bertrac, Ecouen, France, assignor to Parker Pen France, France
Filed Jul. 15, 1980, Ser. No. 169,077
U.S. Cl. D19—49

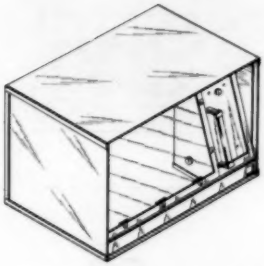
273,018
TRAY FOR HOLDING STATIONERY ARTICLES
Raul Barbieri, and Giorgio Marianelli, both of Via Faruffini, 13, 20149 Milan, Italy
Filed Jul. 31, 1981, Ser. No. 288,895
Claims priority, application Italy, Feb. 13, 1981, 20781 B/81[U]
U.S. Cl. D19—75



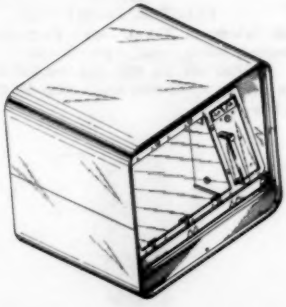
273,019
NEWSPAPER VENDING MACHINE
Jack S. Chalabian, Huntington Beach, Calif., assignor to K-Jack Engineering Company, Inc., Gardena, Calif.
Filed Mar. 29, 1982, Ser. No. 363,043
U.S. Cl. D20—6



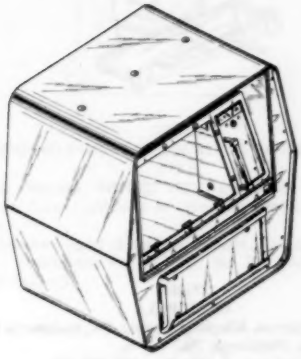
273,020
NEWSPAPER VENDING MACHINE
Jack S. Chalabian, Huntington Beach, Calif., assignor to K-Jack Engineering Company, Inc., Gardena, Calif.
Filed Mar. 29, 1982, Ser. No. 363,044
U.S. Cl. D20—6



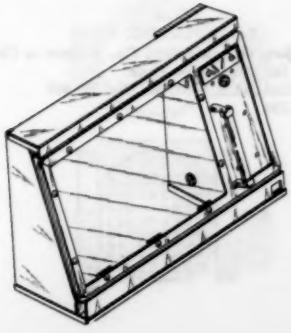
273,021
NEWSPAPER VENDING MACHINE
Jack S. Chalabian, Huntington Beach, Calif., assignor to K-Jack Engineering Company, Inc., Gardena, Calif.
Filed Mar. 29, 1982, Ser. No. 363,045
U.S. Cl. D20—6



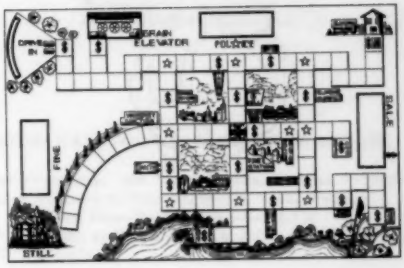
273,022
NEWSPAPER VENDING MACHINE
Jack S. Chalabian, Huntington Beach, Calif., assignor to K-Jack Engineering Company, Inc., Gardena, Calif.
Filed Mar. 29, 1982, Ser. No. 363,046
U.S. Cl. D20—6



273,023
NEWSPAPER VENDING MACHINE INSERT
Jack S. Chalabian, Huntington Beach, Calif., assignor to K-Jack Engineering Company, Inc., Gardena, Calif.
Filed Mar. 29, 1982, Ser. No. 363,047
U.S. Cl. D20—8



273,024
GAME BOARD
James M. Emge, Vanderburgh, Ind., assignor to Cougar Plastics, Inc., Evansville, Ind.
Filed Mar. 8, 1982, Ser. No. 355,798
U.S. Cl. D21—31



273,025
CHILD'S TOY
Norman R. Emms, Welwyn Garden City, England, and Peter D. Bryant, St. Helier, Channel Islands, assignors to Hestair Kiddicraft Limited, Surrey, England
Filed Mar. 19, 1982, Ser. No. 359,816
Claims priority, application United Kingdom, Dec. 3, 1981, 81 1003 967
U.S. Cl. D21—69

273,026
CHILD'S TOY
Norman R. Emms, Welwyn Garden City, England, and Peter D. Bryant, St. Helier, Channel Islands, assignors to Hestair Kiddicraft Limited, Surrey, England
Filed Mar. 19, 1982, Ser. No. 359,692
Claims priority, application United Kingdom, Dec. 3, 1981, 811003968
U.S. Cl. D21—69

273,027
TOY TABLE
Eugene J. Echterling, 22740 Macfarlane Dr., Woodland Hills, Calif. 91364
Filed May 26, 1981, Ser. No. 267,264
U.S. Cl. D21—121

273,028
STUFFED TOY
Donna K. Finney, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 4, 1982, Ser. No. 345,746
U.S. Cl. D21—190

273,029
EXERCISE TREADMILL
Fred W. Kullenberg, Ralston, Nebr., assignor to Instruments for Cardiac Research, Inc., Liverpool, N.Y.
Filed Sep. 16, 1981, Ser. No. 302,488
U.S. Cl. D21—192

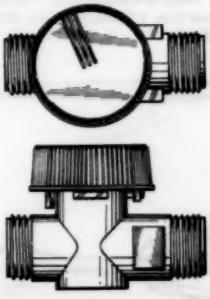
273,030
DUMBBELL
Howard A. Anderson, Allegheny County, Pa., assignor to Leonard Schwartz, Pittsburgh, Pa.
Filed Aug. 3, 1981, Ser. No. 289,780
U.S. Cl. D21—197

273,031
GOLF PUTTING AID
Luther G. Simjian, Ft. Lauderdale, Fla., assignor to Command Automation, Inc., Greenwich, Conn.
Filed Jul. 9, 1981, Ser. No. 281,605
U.S. Cl. D21—234

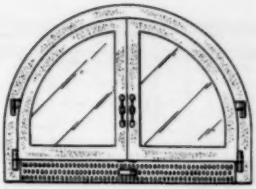
273,032
INSECT FEEDING STATION OR SIMILAR ARTICLE
Keith Woodruff, Mountainside, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Filed Apr. 6, 1981, Ser. No. 251,670
U.S. Cl. D22—19

273,033
SWIMMING POOL CHEMICAL DISPENSER OR THE LIKE
Arlen G. Sangster, Sterling, Mass., and Joseph J. Tepas, Jr., Easton, Conn., assignors to Olin Corporation, New Haven, Conn.
Continuation-in-part of Ser. No. 257,051, Apr. 24, 1981. This application Apr. 11, 1983, Ser. No. 484,826
U.S. Cl. D23—3

273,034
FLUID FLOW CONTROL VALVE
David F. Higgins, Hereford, England, assignor to IMI Mouldings Limited, Herford, England
Filed Jul. 20, 1981, Ser. No. 284,814
Claims priority, application United Kingdom, Jan. 29, 1981, 998704
U.S. Cl. D23—19

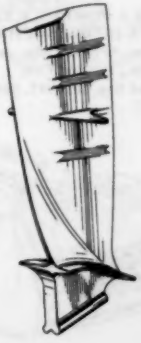


273,035
FIREPLACE DOOR
Gary Booker, 17325 McIntyre, Detroit, Mich. 48219
Filed Aug. 4, 1980, Ser. No. 174,948
U.S. Cl. D23—128



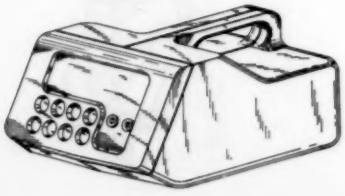
273,036
VENTURI WALL FOR WET SEPARATORS AND THE LIKE
Lennart Gustavsson, and Osten Maatta, both of S-Vaxjo, Sweden, assignors to Flakt Aktiebolag, Nacka, Sweden
Filed Dec. 29, 1980, Ser. No. 220,734
Claims priority, application Sweden, Jul. 4, 1980, 80-1336
U.S. Cl. D23—163

273,037
GAS TURBINE FAN BLADE
Paul R. Dodge, Mesa, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.
Filed Jan. 15, 1981, Ser. No. 225,299
U.S. Cl. D23—165

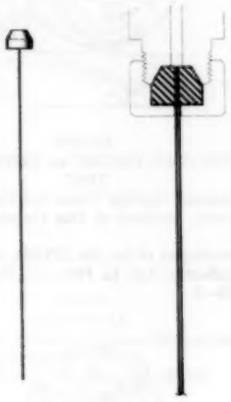


273,038
APPARATUS FOR CHIROPRACTIC THERAPY AND MASSAGE
Teruo Masuda, Tokyo, Japan, assignor to France Bed Co., Tokyo, Japan
Filed Oct. 14, 1981, Ser. No. 311,242
U.S. Cl. D24—03

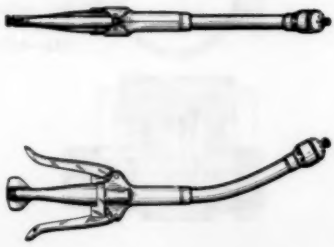
273,039
HOUSING FOR A PORTABLE ELECTRONIC CONTROL FOR A INTRAESOPHAGEAL PACER
James D. Behrens, Arvada, Colo., assignor to Associated Medical Devices, Inc., Denver, Colo.
Filed Sep. 10, 1981, Ser. No. 301,099
U.S. Cl. D24—17



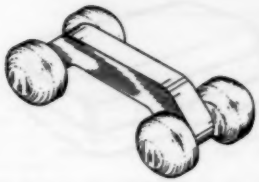
273,040
FUSED SILICA SYRINGE NEEDLE
Rand G. Jenkins, Fair Oaks, and Norman W. Wohlers, Davis, both of Calif., assignors to J&W Scientific, Inc., Rancho Cordova, Calif.
Filed Apr. 23, 1981, Ser. No. 256,924
U.S. Cl. D24—25



273,041
CURVED CIRCULAR ANASTOMOSIS SURGICAL STAPLER
Douglas G. Noiles, New Canaan; Paul O. Rawson, Easton, and Richard Yagami, Bridgewater, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Oct. 2, 1981, Ser. No. 308,086
U.S. Cl. D24—26



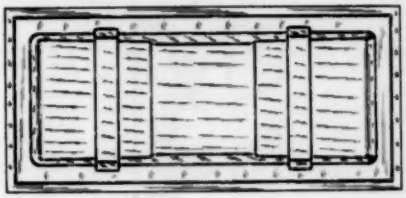
273,042
MASSAGE ROLLER
William G. Jackson, 1018 Idaho St., Lewiston, Id. 83501
Filed Aug. 24, 1981, Ser. No. 295,636
U.S. Cl. D24—36



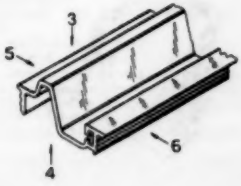
273,043
ICE PACK
Lois Rusch, 3626 Haddonfield Rd., Pennsauken, N.J. 08109
Filed Jun. 24, 1981, Ser. No. 276,629
U.S. Cl. D24—43

273,044
BABY BOTTLE HOLDER
William T. Holcomb, 2175 Mallul Dr., Anaheim, Calif. 92802
Filed Oct. 2, 1981, Ser. No. 307,776
U.S. Cl. D24—48

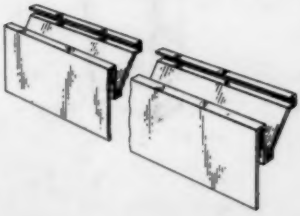
273,045
BASEMENT WINDOW COVER
Kert E. Artwick, Brecksville, Ohio, assignor to Questor Corporation, Tampa, Fla.
Filed Nov. 20, 1981, Ser. No. 323,417
U.S. Cl. D25—54



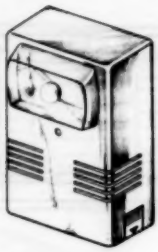
273,046
METAL MOLDING FOR A WALL PANEL OR SIMILAR ARTICLE
Michael D. Fisher, Mooreland; Thomas S. Flowers, and George E. Fort, both of New Castle, all of Ind., assignors to American Standard Inc., New York, N.Y.
Filed Feb. 1, 1982, Ser. No. 344,698
U.S. Cl. D25—74



273,047
CORNICE MOULD
Robert Lloyd-Jones, Unit 2, 27 Sixth Ave., Sandgate, Brisbane, Queensland, Australia
Filed Dec. 16, 1981, Ser. No. 331,553
U.S. Cl. D25—79



273,048
AUTOMATIC SAFETY ENTRY LIGHT
Chung K. Chan, Hong Kong, Hong Kong, assignor to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 30, 1981, Ser. No. 335,966
U.S. Cl. D26—37



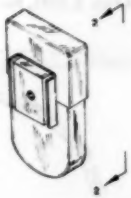
273,049
COMBINATION DOOR LOCK DE-ICER AND TORCH AND KEY RING
Siu L. Lam; Yuk-Ying Wong Chan, and King M. Chan, all of Block 16, 3rd Floor, Shing Wan Industrial Bldg., 15-17 Shing Yip St., Kwun Tong, Kowloon, Hong Kong
Filed Feb. 26, 1981, Ser. No. 238,629
Claims priority, application United Kingdom, Sep. 9, 1980, 996484
U.S. Cl. D26—38

273,050
SMOKER'S PIPE
Mark S. Kaufman, Greenwich, Conn., assignor to Puff International Industries, Inc., New York, N.Y.
Filed Jun. 7, 1982, Ser. No. 385,911
U.S. Cl. D27—3

273,051
SOAP DISH
Richard Runyon, Los Angeles, Calif., assignor to Celle, Inc., New York, N.Y.
Filed Jul. 7, 1981, Ser. No. 281,016
U.S. Cl. D28—76

273,052
SAFE FOR CURRENCY CASSETTES
Clyde R. Snodgrass, Paoli, Pa., assignor to Chubb Industries Inc., Toledo, Ohio
Filed Oct. 19, 1981, Ser. No. 312,741
U.S. Cl. D99—28

273,053
ELASTOMERIC MAGNETIZED KEY CONTAINER
Peter M. Hamborg, 457 Princeton Dr., Costa Mesa, Calif. 92626
Filed Nov. 2, 1981, Ser. No. 317,160
U.S. Cl. D99—28



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF MARCH, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-Betong AB: *See*—
Osterberg, Thomas V., 4,437,017, Cl. 290-52.000.

A. O. Smith Harvestore Products, Inc.: *See*—
Olson, George E., 4,436,473, Cl. 414-310.000.

A/S Raufoss Ammunisjonsfabrikker: *See*—
Jacobsen, Kjell O.; Matre, Tore; Halvorsen, Rolf I.; Heie, Ingar H.; Myhrvold, Erling; and Berger, Ove R., 4,436,034, Cl. 102-334.000.
Strandli, Kaare R.; and Ostlie, Arne M., 4,435,887, Cl. 29-123.000.
Strandli, Kaare R., 4,436,035, Cl. 102-364.000.

AB Karlstads Mekaniska Werkstad: *See*—
Andersson, Ingmar, 4,436,587, Cl. 162-123.000.

AB Welin: *See*—
Nilsson, Per, 4,436,180, Cl. 182-97.000.

Abe, Akira: *See*—
Iwao, Noriaki; and Abe, Akira, 4,435,916, Cl. 46-201.000.

Abe, Masaru: *See*—
Suzuki, Yasuo; Abe, Masaru; and Tezuka, Toshiro, 4,436,130, Cl. 152-353.00R.

Abrams, Howard; and Allen, Barrington T., to Pall Corporation. Process for filtration of oil and gas well treatment fluids. 4,436,635, Cl. 210-806.000.

Abramson, Edward A., to Du Pont de Nemours, E. I., and Company. End capping an optical fiber. 4,436,366, Cl. 350-96.200.

Acea Manodomestici S.r.l.: *See*—
Ferrighi, Antonietta, 4,436,499, Cl. 425-195.000.

ACF Industries, Incorporated: *See*—
Bonds, James V.; and Orum, Paul R., 4,436,279, Cl. 251-86.000.

Achard, Serge, to S.A. Promocab. Dual sensitivity intrusion detection system. 4,437,089, Cl. 340-541.000.

Acme Resin Corporation: *See*—
Laitar, Robert A., 4,436,881, Cl. 525-504.000.

Acme Solar Works, Inc.: *See*—
Larsen, Raymond B., 4,436,085, Cl. 126-450.000.

Adamek, John A.: *See*—
Doery, Michael S.; Hanzlik, Edward W. C.; Adamek, John A.; and McLaughlin, William J., 4,436,301, Cl. 271-177.000.

Adams, Ladd M.: *See*—
Hayatdavoudi, Asadollah; and Adams, Ladd M., 4,436,166, Cl. 175-65.000.

Adlhart, Otto J., to Engelhard Corporation. Control system for hydrogen generators. 4,436,793, Cl. 429-17.000.

Adoniev, Viktor A.: *See*—
Petrov, Lev N.; Adoniev, Viktor A.; and Kononov, Valery I., 4,436,619, Cl. 209-573.000.

Adrian, David L.; and Young, Sam H., to King, Frank J. Card carrying microfilm and associated reading lens. 4,435,912, Cl. 40-365.000.

ADS - Anker GmbH: *See*—
Schuldt, Gerhardt, 4,436,989, Cl. 235-22.000.

Advanced Color Technology, Inc.: *See*—
Hudson, David M., 4,437,104, Cl. 346-140.00R.

Advanced Micro Devices, Inc.: *See*—
Alfke, Peter H.; Rallapali, Krishna; and MacMillan, David, 4,437,158, Cl. 364-200.000.

Agency of Industrial Science & Technology: *See*—
Hayashi, Yutaka; Yamanaka, Mitsuyuki; and Karasawa, Hideyuki, 4,436,761, Cl. 427-38.000.
Mitsuoka, Toyokazu, 4,437,045, Cl. 318-561.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Kuffner, Karl; Marx, Paul; and Lassig, Wolfgang, 4,436,810, Cl. 430-551.000.

Aggen, Alvin F. Material metering device. 4,436,226, Cl. 222-280.000.

Agrawal, Balkishan: *See*—
Andreini, Rockne J.; Mehlman, Stewart K.; Selines, Ronald J.; and Agrawal, Balkishan, 4,436,553, Cl. 75-52.000.

Agri-Tech Ltd., Inc.: *See*—
Gorby, Oliver L., 4,435,996, Cl. 74-713.000.

Aihara, Tetsuo; Nakayama, Yasuharu; Umeyama, Koichi; Sawada, Kozo; and Shinohara, Masaaki, to Kansai Paint Company, Limited. Aqueous resin composition. 4,436,849, Cl. 523-501.000.

Air Products and Chemicals, Inc.: *See*—
Buck, Daniel M.; Sibley, Alan T.; and Kaiser, John J., 4,436,696, Cl. 419-57.000.
Daly, Francis P.; and Wilhelm, Frederick C., 4,436,836, Cl. 502-317.000.
Harwell, Howard L., 4,436,842, Cl. 521-115.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Akagi, Motonobu; Nomura, Ishi; Hattori, Kyo; and Kato, Kichiro, 4,436,070, Cl. 123-440.000.
Hayashi, Motomu; Ishikawa, Atuo; and Yukimoto, Kazuyoshi, 4,437,143, Cl. 362-272.000.

Akagi, Jiro, to Kabushiki Kaisha Komatsu Seisakusho. Fuel injection nozzle and holder assembly for internal combustion engines. 4,436,247, Cl. 239-533.700.

Akagi, Motonobu; Nomura, Isshi; Hattori, Kyo; and Kato, Kichiro, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kabushiki Kaisha. Apparatus for controlling the proportion of air and fuel in an air-fuel mixture of the internal combustion engine. 4,436,070, Cl. 123-440.000.

Akahori, Masaaki; Ohyagi, Takashi; and Nishimura, Shozo, to Nippon Electric Co., Ltd.; and Nippon Telegraph & Telephone Public Corporation. Selective call receiver having timed power supply. 4,437,095, Cl. 340-825.440.

Akao, Mutsuo; and Kawata, Tadashi, to Fuji Photo Film Co., Ltd. Method for light-shielding a roll photographic film. 4,436,809, Cl. 430-501.000.

Akchurin, Rashid Z.: *See*—
Shevakin, Jury F.; Dobkin, Igor I.; Donskoi, Efim M.; Manov, Grigory L.; Zhdanov, Vasily V.; Berger, Elena S.; Popov, Valery M.; Pavlov, Alexei A.; and Akchurin, Rashid Z., 4,435,886, Cl. 29-33.00D.

Akiyama, Hiroyuki; Shimada, Sumio; Hirosawa, Kuninori; and Kuwabara, Hideki, to Japan Styrene Paper Corporation. Process for producing pre-foamed particles of polyolefin resin. 4,436,840, Cl. 521-58.000.

Akiyama, Masanori: *See*—
Taniguchi, Yoshiharu; Edano, Shigeki; and Akiyama, Masanori, 4,437,002, Cl. 250-338.000.

Aktiebolaget Bofors: *See*—
Mohlin, Kjell, 4,436,017, Cl. 89-14.00C.

Aktiebolaget SKF: *See*—
Hallerback, Stig L., 4,436,349, Cl. 308-189.00R.

Akzo NV: *See*—
Behnke, Joachim; and Loffelmann, Walter, 4,436,839, Cl. 521-64.000.

Akzona Incorporated: *See*—
Schroeder, Arnold; and Roskott, Lodewijk, 4,436,844, Cl. 523-144.000.

Albany International Corporation: *See*—
Nicholson, Charles B., 4,435,891, Cl. 29-157.00C.

Albee, Paul J., Jr.; and Burdick, Patricia E., to Allied Corporation. Use of ethylene-vinyl acetate copolymers and oxidized high density polyethylene homopolymers as processing aids for talc filled polypropylene compounds. 4,436,863, Cl. 524-451.000.

Albers, Arthur L. H. Lap device for wheelchair patients. 4,436,339, Cl. 297-153.000.

Albert, Gordon H.; and Feinman, Harvey M., to Sealectro Corporation. Badge reader using infrared light. 4,436,991, Cl. 235-468.000.

Alcon Laboratories, Inc.: *See*—
York, Billie M., Jr., 4,436,745, Cl. 424-273.00R.

Alejandro Llera, Santos A., to Precision Plastic Products Corp. Tamper proof closure. 4,436,212, Cl. 215-252.000.

Alfke, Peter H.; Rallapali, Krishna; and MacMillan, David, to Advanced Micro Devices, Inc. System bus protocol interface circuit. 4,437,158, Cl. 364-200.000.

Allen, Barrington T.: *See*—
Abrams, Howard; and Allen, Barrington T., 4,436,635, Cl. 210-806.000.

Allen, Fred E.; Thuener, Bruce W.; and Shadinger, Peter R., to Wheaton Industries. In-line rotational casting apparatus. 4,436,500, Cl. 425-290.000.

Allen, Linus S., to Mobil Oil Corporation. Method for the determination of clay and mica concentrations in subsurface sandstone formations through radioactive logging. 4,436,997, Cl. 250-256.000.

Allen, Roland M.; and Kalocai, Andrew J., to West Company, The. Apparatus for making molded articles. 4,436,478, Cl. 414-752.000.

Allied Corporation: *See*—
Albee, Paul J., Jr.; and Burdick, Patricia E., 4,436,863, Cl. 524-451.000.
Burdick, Patricia E.; and Rapp, Ronald J., 4,436,850, Cl. 524-8.000.
Flood, Paul W.; Mason, Charles D.; and Schulze, Stephen R., 4,436,872, Cl. 525-179.000.
Kasper, Alan H.; and Mathe, Istvan, 4,436,359, Cl. 339-61.00M.

Allis-Chalmers Corporation: *See*—
Gilgore, William H., 4,435,979, Cl. 73-168.000.

Alps Electric Co., Ltd.: *See*—
Hori, Fumihisa, 4,436,031, Cl. 101-93.170.
Shimaoka, Motohiro, 4,437,132, Cl. 360-105.000.

Aluminum Company of America: *See*—
Hartley, Louis A., II, 4,436,597, Cl. 204-67.000.
McMonigle, Matthew J., 4,436,627, Cl. 210-695.000.

Alvero, Ernesto J.: *See*—
Kelly, William R.; and Alvero, Ernesto J., 4,436,394, Cl. 354-1.000.

ALZA Corporation: *See*—
Urquhart, John; Chandrasekaran, Santosh K.; and Shaw, Jane E., 4,436,741, Cl. 424-267.000.

Aman, Mitsuji: *See*—
Yoshida, Masashi; Yokota, Hajime; Aman, Mitsuji; and Shigemura, Tatsuya, 4,437,129, Cl. 360-85.000.

Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Kutaka; Ishigura, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, to Taisho Pharmaceutical Co., Ltd.; and Kuraray Co., Ltd. Process for producing 1-(p-prenylphenyl)ethanol. 4,436,939, Cl. 568-813.000.

American Hoechst Corporation: *See*—
Walls, John E., 4,436,804, Cl. 430-157.000.
Walls, John E., 4,436,807, Cl. 430-331.000.

American Sports Equipment: *See*—
Fernandez, David, 4,436,305, Cl. 273-73.00C.

American Standard Inc.: *See*—
Pierro, Joseph J., Jr., 4,437,056, Cl. 324-73.0AT.

AMF Inc.: *See*—
Freyrie, Leonardo, 4,436,047, Cl. 114-102.000.

Ammermann, Eberhard: *See*—
Zeeh, Bernd; Goetz, Norbert; Ammermann, Eberherd; and Jung, Johann, 4,436,548, Cl. 71-76.000.

AMP Incorporated: *See*—
Coldren, Daniel R.; and Schwenk, Dennis P., 4,436,358, Cl. 339-17.00C.
McCleerey, Earl W., 4,436,361, Cl. 339-97.00P.

Ampex Corporation: *See*—
Canel, Jules E.; and Gilligan, Thomas J., 4,437,173, Cl. 365-193.000.
Miller, Jerry W.; and Rudnick, Paul J., 4,437,086, Cl. 340-347.0DD.

Anderson, Edward M. Apparatus and method for separating a mixture of two liquids. 4,436,630, Cl. 210-744.000.

Anderson, Harold E. Self-standing marine riser. 4,436,451, Cl. 405-195.000.

Anderson, William, to Siemens Gammasonics Inc. Medical imaging apparatus. 4,437,161, Cl. 364-414.000.

Andersson, Bengt U. I.: *See*—
Larsson, Sven B.; and Andersson, Bengt U. I., 4,436,467, Cl. 411-34.000.

Andersson, Ingmar, to AB Karlstads Mekaniska Werkstad. Method for producing multilayer paper. 4,436,587, Cl. 162-123.000.

Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; and Sinelschikov, Andrei K. Coating for metal-cutting tools. 4,436,830, Cl. 501-96.000.

Andreini, Rockne J.; Mehlman, Stewart K.; Selines, Ronald J.; and Agrawal, Balkishan, to Union Carbide Corporation. Process to produce low hydrogen steel. 4,436,553, Cl. 75-52.000.

Andros Analyzers Incorporated: *See*—
Passaro, Robert E.; and Burough, Irvin G., 4,437,004, Cl. 250-343.000.

Angeles Metal Trim Co.: *See*—
Davenport, Jeanne A.; Campbell, Robert L.; and Gallaway, James F., 4,435,940, Cl. 52-641.000.

Annen, Oskar; Egli, Hermann; and Zesiger, Karl, to Sandoz Ltd. Process for producing dyed and anti-shrink treated wool. 4,436,521, Cl. 8-493.000.

Ante, Louis E.; Lindquist, Richard A.; and Roeschlein, Eugene R., to United States of America, Navy. Simulator for testing sonobuoys. 4,436,049, Cl. 114-254.000.

Anthony, Thomas R.; Connery, Richard J.; and Hoeschele, David F., Jr., to General Electric Company. Silicon-on-sapphire body with conductive paths therethrough. 4,437,109, Cl. 357-68.000.

Aoki, Masaaki: *See*—
Mochizuki, Taketoshi; Matsuo, Kazuya; Kudo, Mituo; Arai, Akira; Yamada, Junichi; Shono, Keizi; Aoki, Masaaki; Ohmori, Masaichi; and Nishi, Genichiro, 4,435,962, Cl. 62-175.000.

Aoki, Masahiro: *See*—
Omae, Takashi; Tanaka, Kisaburoo; Aoki, Masahiro; Hirayama, Fumitoshi; and Izaki, Susumu, 4,436,554, Cl. 75-128.00T.

Aoki, Mitsugu, to Tokyo Kogaku Kikai Kabushiki Kaisha. Ophthalmic instrument having a cross cylinder lens. 4,436,390, Cl. 351-234.000.

Aoki, Takashi: *See*—
Miyoshi, Hideo; Umeda, Tadashi; and Aoki, Takashi, 4,436,411, Cl. 355-14.00D.

Aotsuka, Yasuo: *See*—
Ohtsuka, Shuichi; and Aotsuka, Yasuo, 4,436,802, Cl. 430-100.000.

APM Corporation: *See*—
Morse, Milton, 4,436,965, Cl. 179-184.000.

Applications Mecaniques et Robinetterie Industrielle: *See*—
Chiron, Alain, 4,436,281, Cl. 251-305.000.

Arai, Akira: *See*—
Mochizuki, Taketoshi; Matsuo, Kazuya; Kudo, Mituo; Arai, Akira; Yamada, Junichi; Shono, Keizi; Aoki, Masaaki; Ohmori, Masaichi; and Nishi, Genichiro, 4,435,962, Cl. 62-175.000.

Arai, Tohru: *See*—
Fujita, Hironori; and Arai, Tohru, 4,436,559, Cl. 148-6.000.
Fujita, Hironori; Arai, Tohru; and Mizuno, Jiro, 4,436,560, Cl. 148-6.000.

Araki, Tamio: *See*—
Yamaguchi, Yutaka; Koizumi, Nobuyuki; Araki, Tamio; Kojima, Koichi; and Ikeda, Nobumasa, 4,436,131, Cl. 152-361.0FP.

Arana Erana, Agustin. Molding sand blowers. 4,436,141, Cl. 164-201.000.

Araoka, Katsumasa: *See*—
Nakaya, Shunichi; and Araoka, Katsumasa, 4,437,016, Cl. 290-1.00R.

Arbed S/A: *See*—
Metz, Paul, 4,436,763, Cl. 427-47.000.

Arden, Terry D.; and Foglesong, Robert M. Fireplace rotisserie. 4,436,024, Cl. 99-421.0HV.

Argon Medical Corp.: *See*—
O'Neill, William J., 4,436,519, Cl. 604-175.000.

Armco Inc.: *See*—
Seaburg, Paul A.; and Lautensleger, Richard W., 4,435,932, Cl. 52-263.000.
Stone, Lester W., 4,435,937, Cl. 52-520.000.

Armstrong World Industries, Inc.: *See*—
Ehrhart, Wendell A., 4,436,784, Cl. 428-423.100.

Arnold, Dan M.; Smith, Harry D., Jr.; and Schultz, Ward E., to Halliburton Company. Borehole compensated KUT log. 4,436,996, Cl. 250-256.000.

Arnold, Fred E.: *See*—
Tsai, Tsu-Tzu; and Arnold, Fred E., 4,436,886, Cl. 526-257.000.

Arnold, Winfried, to Robert Bosch GmbH. Control system for a pulled load, particularly agricultural tractor-and-plough control system. 4,437,048, Cl. 318-663.000.

Arthur D. Little, Inc.: *See*—
McCullough, John E., 4,436,495, Cl. 418-55.000.

Asahi Glass Company, Ltd.: *See*—
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, 4,436,772, Cl. 427-379.000.
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, 4,436,773, Cl. 427-380.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Koya, Masahiko; and Fukuoka, Yohei, 4,436,945, Cl. 585-488.000.
Matsuzaki, Kazuhiko; Iwaisako, Toshiyuki; and Masamoto, Junzo, 4,436,900, Cl. 528-490.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Kobayashi, Takeo, 4,436,397, Cl. 354-465.000.
Negoro, Ikuo; and Iwanade, Hisao, 4,436,416, Cl. 355-57.000.
Suzuki, Kozaburo, 4,436,421, Cl. 356-153.000.

Asami, Fumitaka, to Fujitsu Limited. Lock detecting circuit for phase-locked loop frequency synthesizer. 4,437,072, Cl. 331-1.00A.

ASEA Aktiebolag: *See*—
Jonsson, Per-Erik; and Svedberg, Per, 4,437,107, Cl. 357-38.000.

Ashby, Bruce A.; and Schroeter, Siegfried H., to General Electric Company. Ultraviolet light absorbing agents and compositions and articles containing same. 4,436,924, Cl. 556-416.000.

Ask, Jonas W. Saw unit having mutually displaceable saw parts. 4,436,009, Cl. 83-72.000.

Asoyants, Grigory B.: *See*—
Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; Galian, Boris A.; Asoyants, Grigory B.; and Tishura, Vladimir I., 4,436,974, Cl. 219-66.000.

Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, to Societe d'Expansion Scientifique "EXPANSIA". Acrylic copolymers and their use in solid phase peptide synthesis. 4,436,874, Cl. 525-327.100.

Aspisi, Christian; Bonato, Marc; and Jacquier, Robert, to Societe d'Expansion Scientifique "EXPANSIA". Borane complexes. 4,436,919, Cl. 549-4.000.

Assay Tec Associates, Inc.: *See*—
Manning, Charles R., 4,436,819, Cl. 436-1.000.

Ateliers et Chantiers de Bretagne-ABC: *See*—
Ninet, Jean-Louis; and Vaillant, Robert, 4,436,454, Cl. 405-204.000.

Atkins, Terrance J.; and Field, Martin J., to General Motors Corporation. Fuel pressure regulator. 4,436,112, Cl. 137-510.000.

Atlantic Richfield Company: *See*—
Emery, Leonard W., 4,436,165, Cl. 175-61.000.

Atsugi Motor Parts Company Limited: *See*—
Ichikawa, Mamoru; and Satake, Sachio, 4,436,318, Cl. 280-104.000.

Aufderhaar, Ernst; Sprecher, Klemenz; and Zergenyi, Janos, to Ciba-Geigy Corporation. Process for the production of 5-cyano-and 5-carboxamido-5H-dibenz[b,f]azepines. 4,436,660, Cl. 260-239.00D.

Augat Inc.: *See*—
Wey, Robert A.; and Roberts, Harold A., 4,436,295, Cl. 269-21.000.

Automatic Liquid Packaging, Inc.: *See*—
Weiler, Gerhard H.; and Pagels, Louis T., 4,436,210, Cl. 215-32.000.

Automation Industries, Inc.: *See*—
Stenabaugh, Donald D., 4,436,692, Cl. 376-204.000.
Vassalotti, Michael; and Obligado, Alvaro, 4,436,694, Cl. 376-310.000.
Zezza, Louis J.; and Husain, Iqbal, 4,436,693, Cl. 376-272.000.

B & B Insulation, Inc.: *See*—
Harris, Kendall R., 4,436,868, Cl. 524-783.000.

B. F. Goodrich Company, The: *See*—
Houck, Robert J.; and King, Kevin J., 4,436,198, Cl. 198-502.000.
Kramer, James H., 4,436,274, Cl. 248-633.000.

Baardman, Frank; van Helden, Robert; and de Nie-Sarink, Margaretha J., to Shell Oil Company. Process for the ring alkylation of an aniline. 4,436,937, Cl. 564-409.000.

Baas, Albertus H.: *See*—
Nacken, Lambertus J. G.; and Baas, Albertus H., 4,436,706, Cl. 423-65.000.

Baba, Kiyokazu; and Nishida, Kenji, to Kabushiki Kaisha Komatsu Seisakusho. Cam-operated multistroke feed mechanism. 4,436,199, Cl. 198-750.000.

Baba, Mikito: *See*—
Ohyama, Sadahiro; Kato, Hiroshi; Yaguchi, Sadao; Baba, Mikito; and Okada, Morikazu, 4,437,140, Cl. 361-402.000.

Baber, David J.: *See*—
Witalka, Jerome J.; Kurth, Duane G.; and Baber, David J., 4,437,157, Cl. 364-200.000.

Babler, Fridolin, to Ciba-Geigy Corporation. Process for the coloration of linear polyesters in the melt with perylenetetracarboxylic acid bis-methylimide. 4,436,852, Cl. 524-88.000.

Bade & Theelen GmbH: *See*—
Magnus, Wolf; Braach, Otto; Fischer, Dirk; and Wippig, Werner, 4,436,448, Cl. 405-143.000.

Bailey, Daniel D.: *See*—
Campbell, Robert L.; and Bailey, Daniel D., 4,436,075, Cl. 123-557.000.

Baker CAC, Inc.: *See*—
Goans, Kip B., 4,436,105, Cl. 137-1.000.

Baker International Corporation: *See*—
Brooks, Robert T., 4,436,157, Cl. 166-344.000.

Baker Oil Tools, Inc.: *See*—
Callihan, Rudy B.; and Stone, Lyndon R., 4,436,151, Cl. 166-154.000.

Baker, Ronald: *See*—
Kennington, Kerry S.; and Baker, Ronald, 4,436,002, Cl. 81-57.200.

Balbis, Manuel G.; and King, Colin V., to Firestone Tire & Rubber Company, The. Advanced profile radial tire having relatively high inflation pressure. 4,436,127, Cl. 152-209.00R.

Balbo, Anthony M.: *See*—
Dorman, John G.; Balbo, Anthony M.; Randall, Charles E.; and Sette, Robert A., 4,436,184, Cl. 187-29.00R.

Balco, Inc.: *See*—
Borner, Willy; and Jackson, Bernie F., 4,435,982, Cl. 73-462.000.

Baldwin, John J., to Merck & Co., Inc. 3-Cycloalkylamino-2-OR-propoxycyanopyridines. 4,436,740, Cl. 424-263.000.

Ball Corporation: *See*—
Dugal, Jeffrey N., 4,436,778, Cl. 428-36.000.
Nichols, C. Ross; and Miller, Edward C., 4,435,969, Cl. 72-126.000.

Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito. Direct current motor. 4,437,029, Cl. 310-198.000.

Bando, Yoshihide; Tanaka, Toshiki; Honda, Sueaki; Takahashi, Yoshihiko; Tsuruyoshi, Kenichi; Kawashima, Katsumi; and Kishimoto, Syuichi, to Omron Tateisi Electronics Co. Polarized electromagnetic device. 4,437,078, Cl. 335-81.000.

Banko, Anton, to Surgical Design Corporation. Surgical cutting instrument with release mechanism. 4,436,091, Cl. 128-305.000.

Bankovsky, Alexandr I.: *See*—
Vichkanova, Serafima A.; Shipulina, Ljudmila D.; Glyzin, Vladimir I.; Bankovsky, Alexandr I.; Pimenov, Mikhail G.; and Boryaev, Klim I., 4,436,732, Cl. 424-180.000.

Bannon, Robert P., to Shell Oil Company. Adsorption process. 4,436,533, Cl. 55-26.000.

Barbee, Robert B.; and Davis, Burns, to Eastman Kodak Company. Polyester containers having improved gas barrier properties. 4,436,895, Cl. 528-288.000.

Barber, Franklin T.: *See*—
Wood, William E.; and Barber, Franklin T., 4,436,902, Cl. 528-501.000.

Barczak, Virgil J.; Perkins, Haywood A.; and Daigle, O. L. Process for producing iron oxide weighting material from iron chloride solutions. 4,436,681, Cl. 264-67.000.

Barker, Dale E.: *See*—
Dirksing, Robert S.; and Barker, Dale E., 4,436,269, Cl. 248-214.000.

Barker, James M., to Otis Engineering Corporation. Bridge plug. 4,436,150, Cl. 166-31.000.

Barkoczy, Istvan: *See*—
Kaderjak, Gyula; Veres, Albert; Barkoczy, Istvan; and Lonscsak, Janos, 4,436,954, Cl. 174-128.00R.

Barlow, Gordon A.; Newcomer, John R.; and Bezark, Fred, to Gordon Barlow Design. Strategy card game. 4,436,309, Cl. 273-267.000.

Barnes, George D., to Wilkinson Rubber Linatex Limited. Blending of fluid materials. 4,436,433, Cl. 366-152.000.

Barnowski, Reinhard. Toilet flush tank. 4,435,859, Cl. 4-324.000.

Barthold, Klaus: *See*—
Oppenlaender, Knut; Stork, Karl; and Barthold, Klaus, 4,436,639, Cl. 252-8.55E.

Barton, Lyndon O. Bridge bidding aid. 4,436,324, Cl. 283-50.000.

Bartsch, Wolfgang: *See*—
Fauland, Erich; Kampe, Wolfgang; Stach, Kurt; and Bartsch, Wolfgang, 4,436,742, Cl. 424-269.000.

BASF Aktiengesellschaft: *See*—
Brandstetter, Franz; Muench, Volker; Naarmann, Herbert; and Priebe, Edmund, 4,436,854, Cl. 524-139.000.
Broecker, Franz J.; Gruendler, Karl-Heinz; Marosi, Laszlo; Schwarzmann, Matthias; Triebskorn, Bruno; and Zirker, Guenter, 4,436,833, Cl. 502-176.000.
Harder, Wolfgang; Merger, Franz; and Towae, Friedrich, 4,436,668, Cl. 260-463.000.
Hinselmann, Klaus; Naarmann, Herbert; Echte, Adolf; Heil, Eduard; Nikles, Albert; Reffert, Rudi W.; and Hambrecht, Juergen, 4,436,870, Cl. 525-53.000.
Oppenlaender, Knut; Stork, Karl; and Barthold, Klaus, 4,436,639, Cl. 252-8.55E.
Schulz, Rudi; Puestel, Hubert; Weber, Georg; and Kuerten, Heribert, 4,436,702, Cl. 422-195.000.
Strehler, Hugo; Hoerauf, Werner; and Urbanek, Friedrich, 4,436,897, Cl. 528-323.000.
Weitz, Hans-Martin; Fischer, Rolf; and Pohl, Hans H., 4,436,944, Cl. 585-408.000.
Zeeh, Bernd; Goetz, Norbert; Ammermann, Eberhard; and Jung, Johann, 4,436,548, Cl. 71-76.000.

BASF Farben & Fasern AG: *See*—
Batzill, Wolfgang; Diefenbach, Horst; Geist, Michael; and Schupp, Eberhard, 4,436,878, Cl. 525-438.000.

Basic Machinery Co., Inc.: *See*—
Kenworthy, Samuel P., 4,436,501, Cl. 425-308.000.

Batz, Hans-Georg; Linke, Hans-Ralf; Steilner, Klaus; and Weimann, Gunter, to Boehringer Mannheim GmbH. Reactive asymmetrical dicarboxylic acid esters and reagents for the investigation of cardiac glycosides. 4,436,828, Cl. 436-545.000.

Batzill, Wolfgang; Diefenbach, Horst; Geist, Michael; and Schupp, Eberhard, to BASF Farben & Fasern AG. Water-dispersible binders for cationic electropaints, and a process for their preparation. 4,436,878, Cl. 525-438.000.

Baum, Frank. Multi-purpose traveling bag. 4,436,189, Cl. 190-108.000.

Baumgartner Papiers S.A.: *See*—
Lebet, Jean-Pierre, 4,436,517, Cl. 493-45.000.

Bausch & Lomb Incorporated: *See*—
Chromecek, Richard C.; Friends, Gary D.; Wissman, Lawrence Y.; and Yourd, Raymond A., III, 4,436,887, Cl. 526-263.000.

Bax, Ronald F., to Diasonics (NMR) Inc. Gradient power supply. 4,437,053, Cl. 323-268.000.

Baxter Travenol Laboratories, Inc.: *See*—
Bellotti, Marc; Goldhaber, Richard P.; Phillips, Earl G.; and Toch, Theodore H., 4,436,620, Cl. 210-90.000.

Bay, David L., to GTE Products Corporation. Method of effecting stabilized dimming of fluorescent lamps. 4,437,040, Cl. 315-209.00R.

Bayer Aktiengesellschaft: *See*—
Bonse, Gerhard, 4,436,905, Cl. 544-182.000.
Holmwood, Graham; Lurssen, Klaus; and Frohberger, Paul-Ernst, 4,436,907, Cl. 544-335.000.
Marhold, Albrecht; and Klauke, Erich, 4,436,941, Cl. 570-144.000.
Neuhaus, Karl-Friedrich; Muller-Albrecht, Horst; Dollhausen, Manfred; and Perrey, Hermann, 4,436,570, Cl. 156-273.300.
Rasshofer, Werner; Reichmann, Wolfgang; Richartz, Adolf; and Dietrich, Manfred, 4,436,841, Cl. 521-106.000.
Rauleder, Gebhard; and Waldmann, Helmut, 4,436,943, Cl. 585-357.000.

Bayerische Motoren Werke Aktiengesellschaft: *See*—
Fritzenwenger, Josef, 4,436,067, Cl. 123-198.00C.

Beard, Harold J. Clarifier skimmer. 4,436,632, Cl. 210-776.000.

Beard, Walter C. High flow tilt valve with accelerating cam equipped moveable cup. 4,436,229, Cl. 222-402.220.

Beck, Ernst: *See*—
Lenard, Peter; and Beck, Ernst, 4,436,000, Cl. 76-41.000.

Becker, Herbert, to Metallwerk Max Brose GmbH & Co. Drive unit for a transport cable. 4,436,250, Cl. 242-54.00R.

Beckman Instruments, Inc.: *See*—
Meyer, Richard C.; and Carroll, Edward L., 4,435,989, Cl. 73-864.140.
Van Vliet, James G.; and Brown, James R., 4,436,994, Cl. 250-207.000.

Becton Dickinson Company: *See*—
Kaufman, Joseph, 4,436,098, Cl. 128-766.000.

Beecham Group Limited: *See*—
O'Hanlon, Peter J.; and Walker, Graham, 4,436,751, Cl. 424-283.000.

Beerens, Cornelis J. M. Saw sharpening guide. 4,435,999, Cl. 76-36.000.

Beese, John G., to IMI Marston Limited. Reverse buckling bursting disc. 4,436,218, Cl. 220-89.00A.

Beever, William H., to Phillips Petroleum Company. Poly(arylene sulfide) composition suitable for molding. 4,436,865, Cl. 524-504.000.

Beggs, William R.; and Crane, Barry D., to United States of America, Air Force. High energy single pulse laser calorimeter. 4,436,437, Cl. 374-32.000.

Behnke, Joachim; and Loffelmann, Walter, to Akzo NV. Process for preparing polycarbonate-polyether-blockcopolymers. 4,436,839, Cl. 521-64.000.

Belfoure, Edward: *See*—
Miller, Kenneth F.; and Belfoure, Edward, 4,436,879, Cl. 525-439.000.

Bell, Frank H., to Thiokol Corporation. Projectile for dispensing gaseous material. 4,436,036, Cl. 102-367.000.

Bell & Howell Company: *See*—
Orsinger, Winston A., 4,436,299, Cl. 271-100.000.

Bell Telephone Laboratories, Incorporated: *See*—
Cottrell, Jennie L.; Davis, Richard A.; Harris, Susan K.; Jones, Bernard R.; and Payseur, John Y., 4,436,963, Cl. 179-18.00B.
Davis, Richard A.; Harris, Susan K.; and Jones, Bernard R., 4,436,962, Cl. 179-18.00B.
Harmon, William R., Jr., 4,436,960, Cl. 179-51.0AA.
Hodgins, Martin G.; and Jordan, William J., 4,436,365, Cl. 350-96.160.
Khanna, Sarwan K.; and Khanna, Satya P., 4,436,648, Cl. 252-511.000.
Parrillo, Louis C.; Reutlinger, George W.; and Wang, Li-Kong, 4,435,895, Cl. 29-571.000.
Parrillo, Louis C.; and Payne, Richard S., 4,435,896, Cl. 29-571.000.
Petr, David W., 4,437,087, Cl. 340-347.0DD.

Belloli, Archille, to Joule' Technical Corporation. Method and means for orienting bevel tipped needles and the like. 4,436,479, Cl. 414-757.000.

Bellotti, Marc; Goldhaber, Richard P.; Phillips, Earl G.; and Toch, Theodore H., to Baxter Travenol Laboratories, Inc. Integral hydraulic circuit for hemodialysis apparatus. 4,436,620, Cl. 210-90.000.

Beloit Corporation: *See*—
Frye, Kenneth G.; Fitzpatrick, Donald C.; and Karis, Arthur T., 4,436,302, Cl. 271-202.000.

Belt, Kenneth W., to Norland Corporation. Cardiac pacer having active notch filter system. 4,436,093, Cl. 128-419.0PG.

Bemis Company, Inc.: *See*—
Cooper, Barry A., 4,436,788, Cl. 428-483.000.

Bendix Corporation, The: *See*—
Bolenbaugh, Daniel L.; and Wegh, John R., 4,436,187, Cl 188-73.450.
Garnett, Jack L., 4,435,924, Cl. 51-327.000.
Ritsema, Irving R.; and Colpaert, James J., 4,436,186, Cl. 188-71.800.

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Purvis, Fay A.; Bennett, Robert W.; and Ruth, Roger A., 4,436,487, Cl. 417-46.000.

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Berfield, Robert C., to Shop-Vac Corporation. Noise reducing means for vacuum cleaner. 4,435,877, Cl. 15-326.000.

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Berger, Elisabeth J.: *See*—
Haines, Richard M.; Wong, Robert; and Berger, Elisabeth J., 4,436,848, Cl. 523-426.000.

Berger, Ove R.: *See*—
Jacobsen, Kjell O.; Matre, Tore; Halvorsen, Rolf I.; Heie, Ingar H.; Myhrvold, Erling; and Berger, Ove R., 4,436,034, Cl. 102-334.000.

Berglund, Lennart H. A., to Boliden Aktiebolag. Method for recovering useful products from waste products obtained when manufacturing aluminium fluoride. 4,436,629, Cl. 210-712.000.

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Richter, Ekkehard; and Reinke, Martin, 4,436,701, Cl. 422-173.000.

Berkhof, Hendrikus, to Honeywell B.V. Control system for a gas heated water or air heater. 4,436,506, Cl. 431-76.000.

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Berni, Albert J., to Shell Oil Company. Marine seismic system. 4,437,175, Cl. 367-24.000.

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Rohrig, Klaus, 4,435,945, Cl. 53-589.000.

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Bertenshaw, David R.; Lockwood, Edwin P.; and Brown, Anthony R., to Rank Organisation Limited, The. Stage lighting control system. 4,437,169, Cl. 364-900.000.

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Bertin, Patrice, to VALEO. Power assisted steering device for a vehicle. 4,436,171, Cl. 180-148.000.

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Deyesso, Joseph P.; Sarser, David; and Berube, Richard G., 4,436,251, Cl. 242-56.00R.

Best, Gerd; and Weikert, Norbert B., to Krampe & Co. Fertigung in Bergbaubedarf GmbH. Cutting roller for a mining machine. 4,436,346, Cl. 299-87.000.

Best Lock Corporation: *See*—
Best, Walter E.; and Foshee, William R., 4,435,967, Cl. 70-224.000.

Best, Walter E.; and Foshee, William R., to Best Lock Corporation. Doorknob. 4,435,967, Cl. 70-224.000.

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Swift, John E., Sr., 4,437,054, Cl. 324-51.000.

Beyerle, Rudi: *See*—
Schonafinger, Karl; Beyerle, Rudi; Bohn, Helmut; Just, Melitta; Martorana, Piero A.; and Nitz, Rolf-Eberhard, 4,436,743, Cl. 424-269.000.

Beyers, Joseph W.: *See*—
Christopher, Chris J.; Wenninger, Fred W.; Morris, Donald E.; Covington, Wayne F.; Folsom, Jerry B.; Beyers, Joseph W.; Nairn, John H.; and Osborne, Jeffrey C., 4,437,156, Cl. 364-200.000.

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Barlow, Gordon A.; Newcomer, John R.; and Bezark, Fred, 4,436,309, Cl. 273-267.000.

Biehl, Reinhard; and Schmalbein, Dieter, to Bruker Analytische MeBtechnik GmbH. Specimen head for electron spin resonance and paramagnetic electron resonance measurements. 4,437,063, Cl. 324-316.000.

Bielomatik Leuze GmbH & Co.: *See*—
Kunzmann, Otto, 4,436,472, Cl. 414-50.000.

Biermann, Peter: *See*—
Storandt, Ralf; Scheck, Georg; and Biermann, Peter, 4,436,321, Cl. 280-612.000.

Big Inch Marine Systems, Inc.: *See*—
Miller, Jack E., 4,436,325, Cl. 285-18.000.

Biggs, Ian; and Goy, Ronald S., to Dunlop Limited. Rubber/polymeric material composites. 4,436,774, Cl. 427-40.000.

Billeter, Henry R., to Sloan Valve Company. Four-way valve. 4,436,116, Cl. 137-625.470.

Bischoff, Peter G.: *See*—
Osborne, John R.; and Bischoff, Peter G., 4,436,593, Cl. 204-15.000.

Bishop, David C., to Ortho Diagnostic Systems, Inc. Leukocyte migration through antigen containing agaroses for immunocompetence testing. 4,436,824, Cl. 436-514.000.

Bissot, Thomas C.; and Li, Stephen, to RCA Corporation. Method for making a cathode, and method for lowering hydrogen overvoltage in a chloralkali cell. 4,436,599, Cl. 204-98.000.

Black & Decker Inc.: *See*—
Simpson, Frank F., 4,436,163, Cl. 173-117.000.

Blagg, Leon, to Rolligon Corporation. Log skidder with load distributing boom attachment. 4,436,475, Cl. 414-569.000.

Blenkush, Brian J., to Colder Products Company. Quick connect coupling. 4,436,125, Cl. 141-330.000.

Bloedorn, William H.: *See*—
Hodlewsky, Wasly G.; and Bloedorn, William H., 4,436,200, Cl. 198-851.000.

Bloem, Russell J.: *See*—
Smitka, Tim A.; Bunge, Richard H.; French, James C.; and Bloem, Russell J., 4,436,750, Cl. 424-279.000.

Blom, Eric D.; and Singer, Mark I., to Hansa Medical Products, Inc. Voice prosthesis device and placement tool therefor. 4,435,853, Cl. 3-1.300.

Blum, Alvin S. Photon emission imaging apparatus and method. 4,437,160, Cl. 364-414.000.

Blumcke, Alfred; Fischer, Peter; and Vahlensieck, Hans-Joachim, to Dragerwerk Aktiengesellschaft. Silica gels incorporating insolubilized reagents. 4,436,823, Cl. 436-169.000.

Blumenkranz, James J., to R & G Sloane Mfg. Co., Inc. Spiral bifilar welding sleeve. 4,436,988, Cl. 219-544.000.

Bobsein, Rex L., to Phillips Petroleum Company. Catalyst compositions. 4,436,948, Cl. 585-532.000.

Bocquet, Jacques; and Werquin, Jean C., to Union Siderurgique du Nord et de l'Est de la France. Cast cold rolling roll. 4,436,791, Cl. 428-682.000.

Boda, Janos: *See*—
Ferenczi, Gyorgy; Horvath, Peter; Toth, Ferenc; Kiss, Jozsef; and Boda, Janos, 4,437,060, Cl. 324-158.00D.

Boden, Richard M.; Tyszkiewicz, Theodore J.; and Watkins, Hugh, to International Flavors & Fragrances Inc. Phenylethylmethylcarbonate mixtures containing same and organoleptic uses thereof. 4,436,652, Cl. 252-522.00R.

Bodine, Albert G. Sonic pile driver system employing resonant drive member and phased coupling. 4,436,452, Cl. 405-232.000.

Boduch, Paul A.: *See*—
Rendulic, Francis J.; Trasavage, Robert K.; and Boduch, Paul A., 4,436,806, Cl. 430-311.000.

Boehringer Mannheim GmbH: *See*—
Batz, Hans-Georg; Linke, Hans-Ralf; Stellner, Klaus; and Weimann, Gunter, 4,436,828, Cl. 436-545.000.
Fauland, Erich; Kampe, Wolfgang; Stach, Kurt; and Bartsch, Wolfgang, 4,436,742, Cl. 424-269.000.
Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Neubert, Peter, 4,436,735, Cl. 424-182.000.

Boeing Company, The: *See*—
Gratzer, Louis B.; and Gillette, Walter B., 4,436,263, Cl. 244-130.000.
Klees, Garry W., 4,435,958, Cl. 60-204.000.
Russon, Darrel L.; and Wheeler, Warren H., 4,436,007, Cl. 83-23.000.

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Bolen, Charles E.: *See*—
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Bolenbaugh, Daniel L.; and Wegh, John R., to Bendix Corporation, The. Disc brake assembly. 4,436,187, Cl. 188-73.450.

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Berglund, Lennart H. A., 4,436,629, Cl. 210-712.000.
Fahlstrom, Per A. H. H.; and Gorling, Karl G., 4,436,529, Cl. 48-197.00R.

Bollmann, Heinz: *See*—
Zipp, Otmar; Bollmann, Heinz; Stutz, Herbert; and Scholz, Wolfgang, 4,436,869, Cl. 525-51.000.

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Aspisi, Christian; Bonato, Marc; and Jacquier, Robert, 4,436,919, Cl. 549-4.000.

Bonds, James V.; and Orum, Paul R., to ACF Industries, Incorporated. Stem connection for gate valve. 4,436,279, Cl. 251-86.000.

Bonham, Richard T.; Sigiols, John P.; and Dinkelacker, Paul H., to Union Special Corporation. Differential feed mechanism for sewing machines. 4,436,045, Cl. 112-313.000.

Bonse, Gerhard, to Bayer Aktiengesellschaft. Preparation of 4-methyl-5-oxo-3-thioxo-tetrahydro-1,2,4,-(2H,4H)-triazines. 4,436,905, Cl. 544-182.000.

Boodman, Norman S.; Farr, Elvin L.; Osterholm, Robert J.; and Green, Neulan B., III, to United States Steel Corporation. Process for removing solids from coal tar. 4,436,615, Cl. 208-177.000.

Boot, Herbert W.: *See*—
Berrill, William H.; Boot, Herbert W.; and Hartshorn, Frank, 4,435,869, Cl. 12-12.000.

Booth, John L.; and Rittmaster, Peter A., to Booth Manufacturing Company. Packaging machine. 4,435,941, Cl. 53-475.000.

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Booth, John L.; and Rittmaster, Peter A., 4,435,941, Cl. 53-475.000.

Boray, Joseph C., to Ciba-Geigy Corporation. Anthelmintic compositions. 4,436,737, Cl. 424-225.000.

Borg-Warner Corporation: *See*—
Overzet, John K., 4,437,050, Cl. 318-798.000.
Smirl, Richard L., 4,436,193, Cl. 192-107.00C.

Borner, Willy; and Jackson, Bernie F., to Balco, Inc. Machine and method for balancing wheels. 4,435,982, Cl. 73-462.000.

Borstelmann, Wolfgang, to Holstein und Kappert GmbH. Process and apparatus for bottling oxygen-sensitive liquids. 4,436,124, Cl. 141-5.000.

Boryaev, Klim I.: *See*—
Vichkanova, Serafima A.; Shipulina, Ljudmila D.; Glyzin, Vladimir I.; Bankovsky, Alexandr I.; Pimenov, Mikhail G.; and Boryaev, Klim I., 4,436,732, Cl. 424-180.000.

Bosch, Alfred, to Lindauer Dornier Gesellschaft mbH. Clip-chain track for tenter clips. 4,435,884, Cl. 26-93.000.

Botros, Radamis, to Darome, Inc. Conference microphone unit. 4,436,966, Cl. 179-121.00D.

Boukamp, Bernard A.: *See*—
Huggins, Robert A.; and Boukamp, Bernard A., 4,436,796, Cl. 429-112.000.

Bourke, Patrick T. Apparatus for cutting stone panels. 4,436,078, Cl. 125-13.00R.

Bowen, Leslie J., to GTE Laboratories Incorporated. Low voltage ceramic varistor. 4,436,650, Cl. 252-518.000.

Bowes, Laurence B.; and Gray, Thomas J., to General Motors Corporation. Vehicle body molding assembly. 4,436,337, Cl. 296-201.000.

Boyd, Phillip R.; Green, Gary K.; and Sumner, Barbara E., to United States of America, Army. Method of preparing a mercury cadium telluride substrate for passivation and processing. 4,436,580, Cl. 156-636.000.

Braach, Otto: *See*—
Magnus, Wolf; Braach, Otto; Fischer, Dirk; and Wippig, Werner, 4,436,448, Cl. 405-143.000.

Bradley, David J., to International Business Machines Corporation. Apparatus and method for scrolling text and graphic data in selected portions of a graphic display. 4,437,093, Cl. 340-726.000.

Brady, Michael J.; Meyerson, Bernard S.; and Warlaumont, John M., to International Business Machines Corporation. X-Ray mask. 4,436,797, Cl. 430-5.000.

Braginski, Aleksander I.: *See*—
Ekin, John W.; Gavaler, John R.; and Braginski, Aleksander I., 4,437,080, Cl. 335-216.000.

Braley, William W. Ice-breaking hull. 4,436,046, Cl. 114-42.000.

Branch, Howard R., III, to Bristol Babcock Inc. Ridge circuit compensation for environmental effects. 4,437,164, Cl. 364-571.000.

Branchick, Kenneth J.; Nalkin, Irving; and Suchanski, Mary R., to Diamond Shamrock Corporation. Metal removal process. 4,436,601, Cl. 204-149.000.

Brandenstein, Manfred: *See*—
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Brandon, Ronald E. Segmented labyrinth-type shaft sealing system for fluid turbines. 4,436,311, Cl. 277-27.000.

Brandstetter, Franz; Muench, Volker; Naarmann, Herbert; and Priebe, Edmund, to BASF Aktiengesellschaft. Self-extinguishing thermoplastic molding material. 4,436,854, Cl. 524-139.000.

Braud, Societe Anonyme Francaise: *See*—
Deux, Alain; and Merant, Jean C., 4,435,950, Cl. 56-330.000.

Brendel, Gottfried: *See*—
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Bridgestone Tire Co., Ltd.: *See*—
Suzuki, Yasuo; Abe, Masaru; and Tezuka, Toshiro, 4,436,130, Cl. 152-353.00R.
Yamaguchi, Yutaka; Koizumi, Nobuyuki; Araki, Tamio; Kojima, Koichi; and Ikeda, Nobumasa, 4,436,131, Cl. 152-361.0FP.
Yamamoto, Tsuyoshi; Taniguchi, Norihisa; Iida, Kazuyoshi; and Kondo, Yoshikazu, 4,436,179, Cl. 181-210.000.

Brieger, Emmet F., to GEO Vann, Inc. Well cleanup and completion apparatus. 4,436,155, Cl. 166-297.000.

Brightman, Barrie; and Niertit, Frank, to Stromberg-Carlson Corp. Concentrator circuit incorporating solid state bilateral bridge arrangement. 4,437,096, Cl. 340-825.960.

Bristol Babcock Inc.: *See*—
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British Telecommunications: *See*—
Moss, Rodney H.; and Faktor, Marc M., 4,436,769, Cl. 427-252.000.

Brixius, Darryl W.; and Simms, John A., to Du Pont de Nemours, E. I., and Company. Preparation of isocyanate-functional polymers containing a terminal monosulfide group. 4,436,885, Cl. 526-214.000.

Brockway, Inc. (NY): *See*—
McCausland, Thomas W., 4,436,544, Cl. 65-374.120.

Broddon, Alan J.: *See*—
Glickman, Howard E.; Broddon, Alan J.; and Broddon, Norman C., 4,436,331, Cl. 292-270.000.

Broddon, Norman C.: *See*—
Glickman, Howard E.; Broddon, Alan J.; and Broddon, Norman C., 4,436,331, Cl. 292-270.000.

Broecker, Franz J.; Gruendler, Karl-Heinz; Marosi, Laszlo; Schwarzmann, Matthias; Triebskorn, Bruno; and Zirker, Guenter, to BASF Aktiengesellschaft. Preparation of methanol synthesis catalyst comprising zinc, copper and aluminum. 4,436,833, Cl. 502-176.000.

Broken Hill Proprietary Company Limited, The: *See*—
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Brooks, Robert T., to Baker International Corporation. Latch mechanism for subsea test tree. 4,436,157, Cl. 166-344.000.

Brossman, James W., Jr.; Nemeth, Carol A.; and Shapiro, Alan K., to Western Electric Co., Inc. Selecting articles from an array thereof. 4,436,474, Cl. 414-417.000.

Brown, Anthony R.: *See*—
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Brown, Boveri & Cie AG: *See*—
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Brown, Edmund J.: *See*—
McKillip, James B.; and Brown, Edmund J., 4,436,303, Cl. 272-132.000.

Brown, James R.: *See*—
Van Vliet, James G.; and Brown, James R., 4,436,994, Cl. 250-207.000.

Brown, Royden. Pellen trap for beehives with dual entranceways. 4,435,866, Cl. 6-4.00R.

Brudermann, Uwe; Kunze, Karl-H.; Krehl, Gunter; Linde, E. Volker; and Lorenz, Dieter R., to Everest & Jennings, Inc. Chassis for invalid wheelchairs. 4,436,320, Cl. 280-242.0WC.

Brueninghaus Hydraulik GmbH: *See*—
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Bruker Analytische Meßtechnik GmbH: *See*—
Biehl, Reinhard; and Schmalbein, Dieter, 4,437,063, Cl. 324-316.000.

Brumfield, Elmer B. Flying device. 4,436,264, Cl. 244-153.00R.

Brunner, Josef: *See*—
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Brunswick Corporation: *See*—
McCormick, Daniel F., 4,436,443, Cl. 403-14.000.
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Bryan, James B., to United States of America, Energy. Telescoping magnetic ball bar test gage. 4,435,905, Cl. 33-181.00R.

Bubnis, Benard P.: *See*—
Pacey, Gilbert E.; and Bubnis, Benard P., 4,436,923, Cl. 549-352.000.

Buck, Daniel M.; Sibley, Alan T.; and Kaiser, John J., to Air Products and Chemicals, Inc. Process for providing a uniform carbon distribution in ferrous compacts at high temperatures. 4,436,696, Cl. 419-57.000.

Buckstaff Company, Inc., The: *See*—
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Budd Company, The: *See*—
Kirsch, Paul A., 4,436,373, Cl. 350-296.000.

Budda Hajia Handotai Kenkyu Shinkokai: *See*—
Nishizawa, Jun-ichi; and Shiota, Ikuo, 4,436,770, Cl. 427-255.300.

Budzich, Tadeusz, to Caterpillar Tractor Company. Pressure compensated fluid control valve. 4,436,019, Cl. 91-446.000.

Budzich, Tadeusz, to Caterpillar Tractor Company. Dual input pressure compensated fluid control valve. 4,436,020, Cl. 91-446.000.

Budzich, Tadeusz, to Caterpillar Tractor Company. Pressure compensated fluid control valve with maximum flow adjustment. 4,436,115, Cl. 137-596.100.

Budzich, Tadeusz: *See*—
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Buffalo Color Corp.: *See*—
Grotta, Henry M.; and Gaughan, Perry J., 4,436,625, Cl. 210-634.000.

Buhler, Arthur; and Schutz, Hans U., to Ciba-Geigy Corporation. Metalized dyes, their manufacture and use. 4,436,659, Cl. 260-146.00R.

Bukowski, William A., to Optimax III, Inc. Stereoscopic lens system. 4,436,369, Cl. 350-130.000.

Bull, Michael J., to Shell Internationale Research Maatschappij B. V. Process for preparing cyclopropane carboxylic acid ester derivatives. 4,436,667, Cl. 260-465.00D.

Bunge, Richard H.: *See*—
Smitka, Tim A.; Bunge, Richard H.; French, James C.; and Bloem, Russell J., 4,436,750, Cl. 424-279.000.

Bunkenburg, Joachim, to GCA Corporation. Interferometer using transverse deviation of test beam. 4,436,424, Cl. 356-356.000.

Burdick, Patricia E.; and Rapp, Ronald J., to Allied Corporation. Stabilizing SBR latex in cement formulations with low molecular weight polymers. 4,436,850, Cl. 524-8.000.

Burdick, Patricia E.: *See*—
Albee, Paul J., Jr.; and Burdick, Patricia E., 4,436,863, Cl. 524-451.000.
Burger, Helga; and Rossmann, Christian, to Henkel KGaA. Regeneration of aqueous degreasing and cleaning solutions. 4,436,643, Cl. 252-135.000.
Burkle, Wolfgang; and Opitz, Dieter. Tension shaft for winding frames. 4,436,252, Cl. 242-72.00B.
Burlington Industries, Inc.: *See*—
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Burns, Richard D.: *See*—
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Burough, Irvin G.: *See*—
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Burroughs Corporation: *See*—
Harvey, Edgar L., 4,437,037, Cl. 313-585.000.
Burt Precision Products, Inc.: *See*—
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Busch, George E.: *See*—
Schaap, A. Paul; Busch, George E.; and Nolen, Robert L., Jr., 4,436,715, Cl. 423-579.000.
Buss, David L. Metal trough. 4,436,518, Cl. 428-595.000.
Bussell, Hugh M. Modified A-frame structure. 4,435,929, Cl. 52-93.000.
Bussmann, Alfons: *See*—
Rammler, Roland; and Bussmann, Alfons, 4,436,588, Cl. 201-12.000.
Bye, Donald J.; Stanistreet, Harold P.; and Lindenstruth, Werner, to Imperial Chemical Industries PLC. Apparatus and process for the production of pile surface articles. 4,436,503, Cl. 425-384.000.
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C-R-O, Inc.: *See*—
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Calas, Bernard: *See*—
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,436,874, Cl. 525-327.100.
Caldwell, Lawrence G., to Ducon Company, Inc., The. Pneumatic stream divider. 4,436,459, Cl. 406-181.000.
Caldwell, T. Francis, to Puzzle Specialties. Device for facilitating assembly, storage and transportation of a jigsaw puzzle. 4,436,307, Cl. 273-157.00R.
Calgon Corporation: *See*—
Ralston, Paul H.; and Whitney, Sandra L., 4,436,628, Cl. 210-697.000.
Callaway, Milton A., to Simons U.S.A. Corporation. Air bed arrangement. 4,435,864, Cl. 5-453.000.
Callcott, Thomas G.: *See*—
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Callihan, Rudy B.; and Stone, Lyndon R., to Baker Oil Tools, Inc. Apparatus for well cementing through a tubular member. 4,436,151, Cl. 166-154.000.
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Campbell, Willis R.: *See*—
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Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Dyck, Walter R.; and Hay, Burns R., 4,436,096, Cl. 128-689.000.
Canadian Gas Research Institute: *See*—
Galati, Antonio, 4,436,059, Cl. 122-17.000.
Canadian Patents & Development Limited: *See*—
Gauthier, Michel; Hackett, Peter A.; and Willis, Clive, 4,436,709, Cl. 423-437.000.
Canel, Jules E.; and Gilligan, Thomas J., to Ampex Corporation. Core memory controlled by auxiliary core. 4,437,173, Cl. 365-193.000.
Canella, Marco; and Sodini, Giancarlo, to E.N.I. Ente Nazionale Idrocarburi. Method for extracting mycotoxins from vegetable flours. 4,436,756, Cl. 426-430.000.
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Endo, Kiyonobu; and Nose, Noriyuki, 4,436,398, Cl. 354-476.000.
Inuzuka, Tsuneki; Ishida, Masato; Tanioka, Hiroshi; and Sakamaki, Hisashi, 4,436,408, Cl. 355-14.00R.
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Sugitani, Hiroshi; Matsuda, Hiroto; and Ikeda, Masami, 4,437,100, Cl. 346-1.100.
Takahashi, Junichi; Sakane, Toshio; and Itoh, Yuji, 4,436,388, Cl. 351-206.000.
Tanaka, Nobuyoshi; Hashimoto, Seiji; and Kuwayama, Tetsuro, 4,437,112, Cl. 358-44.000.
Cantada, Edilberto, to Singer Company, The. Gate bracketing cushioning spring arrangement for a sewing machine. 4,436,043, Cl. 112-221.000.
Cantrell, John L.: *See*—
Ribi, Edgar E.; Schwartzman, Steven M.; and Cantrell, John L., 4,436,728, Cl. 424-177.000.
Carbonaro, Antonio; and Ripani, Luciano, to Enoxy Chimica, S.p.A. Process for polymerizing conjugate diolefins, and means suitable for this purpose. 4,436,884, Cl. 526-111.000.
Caribou Fisheries, Inc.: *See*—
Trilling, David M.; and Smadar, Yechiel, 4,436,759, Cl. 426-573.000.
Carl Freudenberg, Firma: *See*—
Schmitt, Wilhelm, 4,436,317, Cl. 277-134.000.
Carl Manufacturing Co., Ltd.: *See*—
Mori, Chuzo, 4,435,906, Cl. 33-185.00R.
Carl-Zeiss-Stiftung: *See*—
Fischer, Horst; and Mollring, Friedrich K., 4,436,385, Cl. 350-529.000.
Carlson, Francis M., to Standard Oil Company. In-situ combustion method for controlled thermal linking of wells. 4,436,153, Cl. 166-260.000.
Carlson, Gordon S., to Sunbeam Corporation. Electric blanket safety circuit. 4,436,986, Cl. 219-505.000.
Carlston, Jack E.; and Johnson, Harold W. Portable pane mountable solar panel. 4,436,084, Cl. 126-429.000.
Carnicom, William M., to NL Industries, Inc. Invert emulsion well servicing fluids. 4,436,636, Cl. 252-8.50P.
Carpency, Joseph F.: *See*—
Dowd, Edward J., deceased; and Carpency, Joseph F., 4,436,540, Cl. 62-30.000.
Carpenter, Ralph F., to Pacific Electro Dynamics, Inc. Boost power supply having power factor correction circuit. 4,437,146, Cl. 363-21.000.
Carroll, Edward L.: *See*—
Meyer, Richard C.; and Carroll, Edward L., 4,435,989, Cl. 73-864.140.
Carroll, Frank I.: *See*—
Stelz, Dale E.; Carroll, Frank I.; and Whaley, Wilson M., 4,436,641, Cl. 252-68.000.
Carson, Franklin D.; and Gumert, William R., to Carson Helicopters, Inc. Airborne gravity surveying. 4,435,981, Cl. 73-382.00R.
Carson Helicopters, Inc.: *See*—
Carson, Franklin D.; and Gumert, William R., 4,435,981, Cl. 73-382.00R.
Carstensen, Kenneth J. Releasable drill string device and method. 4,436,158, Cl. 166-377.000.
Cash, Daniel L.; and Stoddard, Frank L. Inert gas distributor attachment for arc welding torches. 4,436,977, Cl. 219-75.000.
Cassella Aktiengesellschaft: *See*—
Schonafinger, Karl; Beyerle, Rudi; Bohn, Helmut; Just, Melitta; Martorana, Piero A.; and Nitz, Rolf-Eberhard, 4,436,743, Cl. 424-269.000.
Castagnos, Leonce F., Jr.: *See*—
Sayles, Scott M.; Castagnos, Leonce F., Jr.; Schrader, Charles H.; Dillingham, Edward W.; and Scott, Richard P., deceased, 4,436,613, Cl. 208-74.000.
Castleman, Bonnie L.; and Jean, Mary. Tennis teaching aid. 4,436,304, Cl. 273-29.00A.
Castro, Robert M.: *See*—
Norris, Brian; and Castro, Robert M., 4,436,592, Cl. 204-15.000.
Caterpillar Tractor Company: *See*—
Budzich, Tadeusz, 4,436,019, Cl. 91-446.000.
Budzich, Tadeusz, 4,436,020, Cl. 91-446.000.
Budzich, Tadeusz, 4,436,115, Cl. 137-596.100.
Cavy, Claude; and Rolland, Marie L., to Commissariat a l'Energie Atomique. Device for bringing about coincidence between the axis of a measuring probe and a normal to the surface of a part to be controlled. 4,437,012, Cl. 250-491.100.
Ceaser, Anthony V. Fluoride containing compositions for removal of pollutants from waste waters and methods of utilizing same. 4,436,645, Cl. 252-179.000.
Ceelen, Theodorus M.; Jeromin, Lothar S.; and Wright, Lamont R., to Xerox Corporation. Xerographic toner cleaning station. 4,436,054, Cl. 118-652.000.
Cellitti, Raymond A.: *See*—
Connelly, John J.; and Cellitti, Raymond A., 4,436,289, Cl. 266-80.000.
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, to Pfizer Inc. Nargenicin C_1. 4,436,747, Cl. 424-274.000.
Centre Electronique Horloger S.A.: *See*—
Choffat, Hubert, 4,435,986, Cl. 73-702.000.
Cerami, Anthony, to Evreka, Inc. Monitor for continuous in vivo measurement of glucose concentration. 4,436,094, Cl. 128-635.000.
Cesar, Jean-Pierre; and Charvet, Jean-Louis, to Compagnie Generale des Etablissements Michelin. Bead rings for tires. 4,436,132, Cl. 152-362.00R.
Chachowski, Rosemary K.: *See*—
Graham, Henry A., Jr.; Hawk, Johnna B.; and Chachowski, Rosemary K., 4,436,631, Cl. 210-772.000.
Chalmers, Samuel A. Power take off gear box. 4,435,990, Cl. 74-15.630.
Chandhoke, Mohanjit S., to Harris Graphics Corporation. Horizontal bindery loader adaptor for feeding signatures into a vertical pocket. 4,436,297, Cl. 271-3.100.
Chandrasekaran, Santosh K.: *See*—
Urquhart, John; Chandrasekaran, Santosh K.; and Shaw, Jane E., 4,436,741, Cl. 424-267.000.
Chang, Hui-Huang. Universal multi-socket ratchet wrench. 4,436,004, Cl. 81-60.000.

Chang, Long F., to Owens-Illinois, Inc. Ribbed base cups. 4,436,216, Cl. 220-69.000.

Chang, Melvin C.; and Howell, John L., to United States Steel Corporation. Method of furnace operation with high pellet burdens. 4,436,552, Cl. 75-41.000.

Chappell, Joseph S.: *See*—
Sasseville, Roland E.; Chappell, Joseph S.; and Corcoran, Daniel J., Jr., 4,435,965, Cl. 68-205.00R.

Charis, Phillip S.; and Sweeney, Roy, to Charis, Phillip Stewart, a part interest. Apparatus for positive vignetting. 4,436,400, Cl. 354-296.000.

Charis, Phillip Stewart: *See*—
Charis, Phillip S.; and Sweeney, Roy, 4,436,400, Cl. 354-296.000.

Charles, Hugh G. Window insulation system. 4,436,137, Cl. 160-242.000.

Charvet, Jean-Louis: *See*—
Cesar, Jean-Pierre; and Charvet, Jean-Louis, 4,436,132, Cl. 152-362.00R.

Chass, Jacob, to Pickering & Company, Inc. Linear differential transformer with constant amplitude and variable phase output. 4,437,019, Cl. 307-83.000.

Chemische Fabrik Grunau GmbH: *See*—
Kadelka, Friedrich, 4,436,556, Cl. 106-90.000.

Chernosky, John E. Keyless lock. 4,436,328, Cl. 292-67.000.

Chevron Research Company: *See*—
Olbrich, Hazel C.; O'Rear, Dennis J.; and Zakarian, John A., 4,436,614, Cl. 208-89.000.
Stemke, Jeffrey E., 4,436,649, Cl. 252-51.50A.
Yamaguchi, Elaine S., 4,436,640, Cl. 252-32.70E.

Cheynet et ses fils: *See*—
Cheynet, Rene, 4,436,121, Cl. 139-116.000.

Cheynet, Rene, to Cheynet et ses fils. Process for manufacturing an elastic or non-elastic ribbon. 4,436,121, Cl. 139-116.000.

Child, Edward T.; and Crouch, William B., to Texaco Development Corporation. Process for gasifying solid carbon containing materials. 4,436,530, Cl. 48-197.00R.

Chimici Perdomini S.p.A.: *See*—
Perdomini, Luciano; Tonon, Elia; and Paronetto, Lanfranco, 4,436,755, Cl. 426-15.000.

Chiron, Alain, to Applications Mecaniques et Robinetterie Industrielle. Butterfly valve with an improved obturation device. 4,436,281, Cl. 251-305.000.

Chloride Group Public Limited Company: *See*—
Cooper, Michael J.; and Parker, James, 4,436,795, Cl. 429-53.000.

Choffat, Hubert, to Centre Electronique Horloger S.A. Pressure transducer of the vibrating element type. 4,435,986, Cl. 73-702.000.

Cholod, Michael S., to Rohm and Haas Company. Copolyester of polyethylene terephthalate and sulfonyl diphenol. 4,436,893, Cl. 528-173.000.

Christidis, Yani; and Fournex, Robert, to Roussel Uclaf. Treatment of gastric and gastro-duodenal disorders with derivatives of phenyl aliphatic carboxylic acids. 4,436,752, Cl. 424-317.000.

Christie, George A.: *See*—
Kluge, Arthur F.; Strosberg, Arthur M.; Whiting, Roger L.; and Christie, George A., 4,436,914, Cl. 548-348.000.

Christopher, Chris J.; Wenninger, Fred W.; Morris, Donald E.; Covington, Wayne F.; Folsom, Jerry B.; Beyers, Joseph W.; Nairn, John H.; and Osborne, Jeffrey C., to Hewlett-Packard Company. Programmable calculator. 4,437,156, Cl. 364-200.000.

Chromecek, Richard C.; Friends, Gary D.; Wissman, Lawrence Y.; and Yourd, Raymond A., III, to Bausch & Lomb Incorporated. N-Vinyl lactam based biomedical devices. 4,436,887, Cl. 526-263.000.

Chumley, William M. Landscaping and seeding apparatus. 4,436,040, Cl. 111-10.000.

Church, Kenneth: *See*—
Strong, William A.; and Church, Kenneth, 4,436,429, Cl. 366-2.000.
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Ciba-Geigy AG: *See*—
Fryberg, Mario; and Weiss, Viktor, 4,436,811, Cl. 430-564.000.
Shennan, Christopher D.; and Fry, Michael W., 4,436,798, Cl. 430-17.000.

Ciba-Geigy Corporation: *See*—
Aufderhaar, Ernst; Sprecher, Klemenz; and Zergenyi, Janos, 4,436,660, Cl. 260-239.00D.
Babler, Fridolin, 4,436,852, Cl. 524-88.000.
Berrer, Dagmar; Pissiotas, Georg; and Rohr, Otto, 4,436,935, Cl. 564-49.000.
Boray, Joseph C., 4,436,737, Cl. 424-225.000.
Buhler, Arthur; and Schutz, Hans U., 4,436,659, Cl. 260-146.00R.
Howell, Frederick H., 4,436,936, Cl. 564-409.000.
Hugelshofer, Paul; Zbinden, Peter; and Koci, Zdenek, 4,436,523, Cl. 8-527.000.
Irving, Edward, 4,436,880, Cl. 525-504.000.
Pfaendler, Hans R., 4,436,661, Cl. 260-245.300.
Renfroe, Harris B., 4,436,746, Cl. 424-273.00R.
Sasseville, Roland E.; Chappell, Joseph S.; and Corcoran, Daniel J., Jr., 4,435,965, Cl. 68-205.00R.
Sedelmeier, Gottfried; and Scartazzini, Riccardo, 4,436,903, Cl. 544-016.000.
Zondler, Helmut; Lohse, Friedrich; and Moser, Roland, 4,436,892, Cl. 528-117.000.

Ciciora, John A., to Nelson & Johnson Engineering. Material compactor utilizing a power transmission mechanism. 4,436,030, Cl. 100-268.000.

Claire, Edward W.: *See*—
Dahlgren, William V., Jr.; Silverstein, Lewis S.; and Claire, Edward W., 4,437,150, Cl. 364-474.000.

Clarke, William C.: *See*—
Fields, Ellis K.; and Clarke, William C., 4,436,940, Cl. 568-857.000.

Clayton, Harold K., Jr., to Cooper Industries, Inc. Encapsulated, waterproof temperature sensitive device and method of manufacture. 4,437,084, Cl. 338-22.00R.

Clere, Thomas M.: *See*—
Bennett, William R.; and Clere, Thomas M., 4,436,608, Cl. 204-265.000.

Clutter, James E. Vehicle wheel splash guard. 4,436,319, Cl. 280-154.50R.

Clyde Corporation: *See*—
MacDonald, Murdo A., 4,436,197, Cl. 198-389.000.

Coca-Cola Company, The: *See*—
Credle, William S., Jr., 4,436,493, Cl. 417-393.000.

Cocal, Inc.: *See*—
Moore, Wilcy I.; and Tassoni, Ronald L., 4,436,617, Cl. 209-3.000.

Cochran, Larry A., to RCA Corporation. Dynamic coring circuit. 4,437,124, Cl. 358-166.000.

Cohen, Eric S. Telephone lock. 4,436,967, Cl. 179-189.00R.

Cohen, Georges; and Heroux, Jean, to Thomson-CSF. Ultrahigh-frequency transmission line of the three-plate air type and uses thereof. 4,437,074, Cl. 333-128.000.

Colder Products Company: *See*—
Blenkush, Brian J., 4,436,125, Cl. 141-330.000.

Coldren, Daniel R.; and Schwenk, Dennis P., to AMP Incorporated. Terminal tab intended for mounting on a circuit board. 4,436,358, Cl. 339-17.00C.

Cole, James H., to United States of America, Navy. Signal waveform detector using synthetic FM demodulation. 4,436,425, Cl. 356-361.000.

Coleman Company, Inc., The: *See*—
Hefling, Dennis V., 4,436,081, Cl. 126-285.00A.

Colgate-Palmolive Company: *See*—
Gaffar, Abdul, 4,436,721, Cl. 424-52.000.
Ramachandran, Pallassana N.; and Peterson, Kenneth S., 4,436,637, Cl. 252-8.700.
Zmoda, Barney J.; and Fessock, Paul J., 4,436,525, Cl. 44-7.300.

Collonia, Harald, to VDO Adolf Schindling AG. Setting device for the controlled displacement of a stop connected with a setting member. 4,436,069, Cl. 123-339.000.

Colpaert, James J.: *See*—
Ritsema, Irving R.; and Colpaert, James J., 4,436,186, Cl. 188-71.800.

Combustion Engineering, Inc.: *See*—
Wentzell, Timothy H., 4,436,190, Cl. 191-12.20R.

Comitatonazionale Per Lienergia Nucleare: *See*—
Masotto, Ermanno; and Gagliardi, Sergio, 4,436,655, Cl. 252-628.000.

Commissariat a l'Energie Atomique: *See*—
Cavy, Claude; and Rolland, Marie L., 4,437,012, Cl. 250-491.100.

Compagnie Francaise des Petroles: *See*—
Josien, Daniel; and Migliarese, Jean-Louis, 4,436,120, Cl. 138-93.000.

Compagnie Generale des Etablissements Michelin: *See*—
Cesar, Jean-Pierre; and Charvet, Jean-Louis, 4,436,132, Cl. 152-362.00R.

Compagnie Industrielle des Telecommunications: *See*—
Tallon, Jacques, 4,436,998, Cl. 250-288.000.

Conger/Murray Systems, Inc.: *See*—
Murray, John A., 4,436,498, Cl. 425-73.000.

Connelly, John J.; and Cellitti, Raymond A., to International Harvester Co. Method and apparatus for controlling the atmosphere in a carburizing furnace utilizing a cascaded valving system. 4,436,289, Cl. 266-80.000.

Connery, Richard J.: *See*—
Anthony, Thomas R.; Connery, Richard J.; and Hoeschele, David F., Jr., 4,437,109, Cl. 357-68.000.

Contour Med Partners, Ltd.: *See*—
White, David N., 4,436,684, Cl. 264-138.000.

Converse, Maurice. Infant safety car seat. 4,436,341, Cl. 297-250.000.

Cook, William A.; Fearnot, Neal E.; and Geddes, Leslie A., to Purdue Research Foundation. Exercise responsive cardiac pacemaker. 4,436,092, Cl. 128-419.0PG.

Cooper, Barry A., to Bemis Company, Inc. Composite stretch wrap film. 4,436,788, Cl. 428-483.000.

Cooper Industries, Inc.: *See*—
Clayton, Harold K., Jr., 4,437,084, Cl. 338-22.00R.

Cooper, Michael J.; and Parker, James, to Chloride Group Public Limited Company. Alkaline electric storage cells. 4,436,795, Cl. 429-53.000.

Coose, James P.: *See*—
Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., 4,437,006, Cl. 250-363.00S.

Copple, Kerry J., to Du Pont de Nemours, E. I., and Company. Method for making balanced low shrink tension polyolefin film. 4,436,888, Cl. 526-348.100.

Coquillart, Michel, to Mavilor Systemes. Rotor with a cooling device, more particularly of the commutator, for electric motors, and the method and means for making this device. 4,437,030, Cl. 310-227.000.

Corcoran, Daniel J., Jr.: *See*—
Sasseville, Roland E.; Chappell, Joseph S.; and Corcoran, Daniel J., Jr., 4,435,965, Cl. 68-205.00R.

Cork, Robin M. S.; and Rose, David B., to International Business Machines Corp. Method of testing a data communication system. 4,437,184, Cl. 371-19.000.

Corneille, David M., to Corneille, David M. Thermionic cathode and process for preparing the same. 4,436,651, Cl. 252-521.000.

Cornell-Dubilier Electric Corporation: *See*—
Pitel, Ira J., 4,437,043, Cl. 315-308.000.

Corning Glass Works: *See*—
Howell, Robert G., 4,436,829, Cl. 501-22.000.
Keck, Donald B., 4,436,368, Cl. 350-96.330.

Corry, Stuart E.; and Grade, Lanny V., to Geolograph Company, The. Apparatus for indicating critical torque load. 4,435,988, Cl. 73-862.190.

Cota, Albert O.; and Obray, Dean C. Delayed vehicle starter. 4,436,176, Cl. 180-287.000.

Cottrell, Jennie L.; Davis, Richard A.; Harris, Susan K.; Jones, Bernard R.; and Payseur, John Y., to Bell Telephone Laboratories, Incorporated. Implied principal addressing in a call coverage arrangement. 4,436,963, Cl. 179-18.00B.

Coura, Herbert R.: *See*—
Tuchenhagen, Otto A. P.; Mieth, Hans O. E.; and Coura, Herbert R., 4,436,106, Cl. 137-240.000.

Covington, Wayne F.: *See*—
Christopher, Chris J.; Wenninger, Fred W.; Morris, Donald E.; Covington, Wayne F.; Folsom, Jerry B.; Beyers, Joseph W.; Nairn, John H.; and Osborne, Jeffrey C., 4,437,156, Cl. 364-200.000.

Cox, Raymond G. Tool for supporting and turning threaded members. 4,436,003, Cl. 81-57.430.

CR Industries: *See*—
Hatch, Seymour A.; and Morley, James P., 4,436,315, Cl. 277-92.000.

Craig, Clark E., to Keystone Consolidated Industries, Inc. Motorcycle saddle bag lock. 4,435,966, Cl. 70-161.000.

Crane, Barry D.: *See*—
Beggs, William R.; and Crane, Barry D., 4,436,437, Cl. 374-32.000.

Crane, Walton B.: *See*—
Nason, Frederic L.; and Crane, Walton B., 4,436,243, Cl. 229-27.000.

Credle, William S., Jr., to Coca-Cola Company, The. Self contained pump and reversing mechanism therefor. 4,436,493, Cl. 417-393.000.

Crisp, Malcolm; and Lewis, Christopher, to Plessey Overseas Limited. Method of and apparatus for assessing coins. 4,436,196, Cl. 194-100.00A.

Crompton & Knowles Corporation: *See*—
Faillace, Louie M., 4,437,046, Cl. 318-571.000.

Cronan, Walter I. Guide member for a roller-type classifying machine. 4,436,208, Cl. 209-668.000.

Cross, Henry F.; and Harman, Maurice, to Energy Equipment Co. Ltd. Method and apparatus enabling thermal energy recovery in combustor operation. 4,436,057, Cl. 122-4.00D.

Crouch, William B.: *See*—
Child, Edward T.; and Crouch, William B., 4,436,530, Cl. 48-197.00R.

Crowe, Robert E., to Terrafix Erosion Control Products, Inc. Erosion control blocks. 4,436,447, Cl. 405-76.000.

Crowley, Burlon C.: *See*—
Tetenbaum, Marvin T.; and Crowley, Burlon C., 4,436,862, Cl. 524-445.000.

Crown Zellerbach Corporation: *See*—
Lane, Stanley C., 4,436,703, Cl. 422-225.000.

Crutcher, John P.: *See*—
Vornberger, George F.; and Crutcher, John P., 4,436,237, Cl. 227-130.000.

Cullen, John S.; Incorvia, Samuel A.; and Vogt, James A., to Multiform Desiccants, Inc. Adsorbent cartridge. 4,436,623, Cl. 210-282.000.

Cullen, Walter P.: *See*—
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,436,747, Cl. 424-274.000.

Cummings, Robert J., to United States of America, Air Force. Windblast head protector for use during pilot ejection from an aircraft. 4,436,262, Cl. 244-122.0AG.

Cunningham, Patrick J. Cardiovascular exercise apparatus. 4,436,097, Cl. 128-707.000.

Cuscurida, Michael: *See*—
Rowton, Richard L.; and Cuscurida, Michael, 4,436,843, Cl. 521-167.000.

Dahl, James M.; Jacobs, Bernard B.; Lipovac, Joseph E.; Meglen, Ralph A.; and Ward, Donald W., to Goodyear Tire & Rubber Company, The. Mold and vent plug therefor. 4,436,497, Cl. 425-28.00R.

Dahlgren, William V., Jr.; Silverstein, Lewis S.; and Claire, Edward W. Tool manipulating method and apparatus for multiple job processing. 4,437,150, Cl. 364-474.000.

Dai Nippon Toryo Co., Ltd.: *See*—
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, 4,436,772, Cl. 427-379.000.
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, 4,436,773, Cl. 427-380.000.

Daicel Chemical Industries, Ltd.: *See*—
Okamoto, Ichiro; and Toga, Yuzo, 4,436,896, Cl. 156-332.000.

Daigle, O. L.: *See*—
Barczak, Virgil J.; Perkins, Haywood A.; and Daigle, O. L., 4,436,681, Cl. 264-67.000.

Daimler-Benz Aktiengesellschaft: *See*—
Mehren, Herbert; and Panik, Ferdinand, 4,436,170, Cl. 180-131.000.

Daiwa Can Company, Limited: *See*—
Nishida, Yoshiaki; Yano, Shunji; and Masuyama, Tadahiro, 4,436,594, Cl. 204-33.000.

Daly, Francis P.; and Wilhelm, Frederick C., to Air Products and Chemicals, Inc. Catalyst for the hydrodealkylation of alkylaromatic compounds. 4,436,836, Cl. 502-317.000.

Dambroth, Jurgen, to Rux GmbH, Firma. Gardening device. 4,435,951, Cl. 56-400.050.

Danfoss A/S: *See*—
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Daniel Industries, Inc.: *See*—
Geisow, Bernard H., 4,436,280, Cl. 251-229.000.

Daniels, Jesse: *See*—
Temple, William F.; and Daniels, Jesse, 4,436,484, Cl. 416-178.000.

Darby, Kenneth S. Free-sail system sailboard simulator. 4,436,513, Cl. 434-60.000.

Darling, Phillip H. Piston actuated, pilot valve operated breathing regulator. 4,436,090, Cl. 128-204.260.

Darmouni, Corinne, to Thomson-CSF. Self-corrected electric filters. 4,437,075, Cl. 333-167.000.

Darome, Inc.: *See*—
Botros, Radamis, 4,436,966, Cl. 179-121.00D.

Datakey, Inc.: *See*—
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Daunis, Jacques: *See*—
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,436,874, Cl. 525-327.100.

Davenport, Jeanne A.; Campbell, Robert L.; and Gallaway, James F., to Angeles Metal Trim Co. Metal building truss. 4,435,940, Cl. 52-641.000.

Davis, Burns: *See*—
Barbee, Robert B.; and Davis, Burns, 4,436,895, Cl. 528-288.000.

Davis, Richard A.; Harris, Susan K.; and Jones, Bernard R., to Bell Telephone Laboratories, Incorporated. Call coverage arrangement. 4,436,962, Cl. 179-18.00B.

Davis, Richard A.: *See*—
Cottrell, Jennie L.; Davis, Richard A.; Harris, Susan K.; Jones, Bernard R.; and Payseur, John Y., 4,436,963, Cl. 179-18.00B.

Davis, Richard F., to Dayco Corporation. Curved mandrel for curing polymeric hose and method. 4,436,690, Cl. 264-313.000.

Davis, Roy A.; and Madison, Norman L., to Dow Chemical Company, The. Polyoxazoline-modified, paper coating. 4,436,789, Cl. 428-537.000.

Davis, Sydney; and Malakhoff, Alexander. Transversely supported seal. 4,436,312, Cl. 277-34.000.

Davy McKee Aktiengesellschaft: *See*—
Koschinek, Gunter; Wandel, Dietmar; Kretschmann, Bernd; and Zinsser, Rolf, 4,436,688, Cl. 264-176.00F.

Davy McKee Aktiengesellschaft, Borsigalle: *See*—
Hofmann, Hansdieter; Rothe, Hans-Jochen; Skupin, Georg; and Wolff, Konrad, 4,436,898, Cl. 528-336.000.

Dayco Corporation: *See*—
Davis, Richard F., 4,436,690, Cl. 264-313.000.

Dean, Mark E.; Eggebrecht, Lewis C.; Kummer, David A.; and Saenz, Jesus A., to International Business Machines Corporation. Color video display system having programmable border color. 4,437,092, Cl. 340-703.000.

Deere & Company: *See*—
Gradmann, Gerhard, 4,436,065, Cl. 123-179.00B.
Hauk, Klaus, 4,435,875, Cl. 15-250.230.
Hurt, James J.; and Foss, Susan K., 4,437,151, Cl. 364-571.000.

DeFilippis, John: *See*—
Mazza, Frank J.; and DeFilippis, John, 4,436,957, Cl. 179-2.0EA.

Degremont: *See*—
Holca, Radu, 4,436,605, Cl. 204-225.000.

de Groot, Marius: *See*—
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Degussa Aktiengesellschaft: *See*—
Kleemann, Axel; Lehmann, Bernd; and Martens, Jurgen, 4,436,910, Cl. 546-245.000.

de Hek, Johan A., to Veco Beheer B.V. Process of electroforming screen material. 4,436,591, Cl. 204-11.000.

De Jong, Sijtze: *See*—
Smoot, Arren F.; and De Jong, Sijtze, 4,436,449, Cl. 405-170.000.

Demirjian, Ara M.; and Solbes, Albert, to United States of America, Energy. Apparatus for electrode current control in linear MHD generators. 4,437,026, Cl. 310-11.000.

Demke, Kent R.; and Dwire, Jerold D., to International Business Machines Corporation. Multiple half-line spacing on a miniature page. 4,437,167, Cl. 364-900.000.

de Nie-Sarink, Margaretha J.: *See*—
Baardman, Frank; van Helden, Robert; and de Nie-Sarink, Margaretha J., 4,436,937, Cl. 564-409.000.

Depp, Steven W.; and Sincerbox, Glenn T., to International Business Machines Corporation. Optical fluid analyzing apparatus and method. 4,436,420, Cl. 356-128.000.

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Nonnenmann, Manfred; and Deuschle, Steffi, 4,436,245, Cl. 236-49.000.

Deux, Alain; and Merant, Jean C., to Braud, Societe Anonyme Francaise. Fruit or berry harvesting device for in-line crops. 4,435,950, Cl. 56-330.000.

de Vries, Jan, to Thomassen Amsterdam B.V. Gate valve with reinforcing ribs. 4,436,282, Cl. 251-329.000.

de Wilde, Johannes, to U.S. Philips Corporation. Method of manufacturing a magnetic head unit. 4,435,900, Cl. 29-603.000.

Deyesso, Joseph P.; Sarser, David; and Berube, Richard G., to King Instrument Corporation. Tape winding system. 4,436,251, Cl. 242-56.00R.

Diamond Shamrock Chemicals Company: *See*—
Schick, Martin J.; and Knitter, Kathy A., 4,436,528, Cl. 44-51.000.

Diamond Shamrock Corporation: *See*—
Bennett, William R.; and Clere, Thomas M., 4,436,608, Cl. 204-265.000.
Branchick, Kenneth J.; Nalkin, Irving; and Suchanski, Mary R., 4,436,601, Cl. 204-149.000.

Diasonics (NMR) Inc.: *See*—
Bax, Ronald F., 4,437,053, Cl. 323-268.000.

Dick, Neil M., to 4-D Electronics Company, Inc. Coin collecting and counting systems. 4,436,103, Cl. 133-3.00D.

Didier-Werke AG: *See*—
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, 4,436,680, Cl. 264-60.000.

Diefenbach, Horst: *See*—
Batzill, Wolfgang; Diefenbach, Horst; Geist, Michael; and Schupp, Eberhard, 4,436,878, Cl. 525-438.000.

Diepers, Heinrich, to Siemens Aktiengesellschaft. Ultrasonic transducer matrix having filler material with different acoustical impedance. 4,437,033, Cl. 310-334.000.

Diery, Helmut, to Hoechst Aktiengesellschaft. Polymeric ethylene oxide/propylene oxide or ethylene oxide/butylene oxide ether carboxylic acids, a process for their preparation and their use. 4,436,933, Cl. 562-470.000.

Dietrich, Manfred: *See*—
Rasshofer, Werner; Reichmann, Wolfgang; Richartz, Adolf; and Dietrich, Manfred, 4,436,841, Cl. 521-106.000.

Dietz, Raymond L.; Featherby, Michael; and Margetts, Peter K., to Johnson Matthey Inc. Silver-filled glass. 4,436,785, Cl. 428-427.000.

DiGiacomo, Peter M.; and Dines, Martin B., to Occidental Research Corporation. Layered organophosphorus inorganic polymers. 4,436,899, Cl. 528-395.000.

Dillingham, Edward W.: *See*—
Sayles, Scott M.; Castagnos, Leonce F., Jr.; Schrader, Charles H.; Dillingham, Edward W.; and Scott, Richard P., deceased, 4,436,613, Cl. 208-74.000.

DiMartino, Michelangelo, to Burt Precision Products, Inc. Method and apparatus for fabricating fusion reactor coils. 4,436,461, Cl. 409-132.000.

Dines, Martin B.: *See*—
DiGiacomo, Peter M.; and Dines, Martin B., 4,436,899, Cl. 528-395.000.

Dinka, Stephen K., to Pitman-Moore, Inc. Cell growth promoting material. 4,436,816, Cl. 435-240.000.

Dinkelacker, Paul H.: *See*—
Bonham, Richard T.; Sigiols, John P.; and Dinkelacker, Paul H., 4,436,045, Cl. 112-313.000.

Dipper, Barry: *See*—
Wood, Denis; Thomas, John F., Jr.; and Dipper, Barry, 4,436,371, Cl. 350-281.000.

Dirksing, Robert S.; and Barker, Dale E., to Procter & Gamble Company, The. Dispenser suspension means employing planar spring-loaded detent. 4,436,269, Cl. 248-214.000.

Dirnberger, Linus R.: *See*—
Ludwig, Richard H.; Quan, Wing C.; Husson, Alan L.; Dirnberger, Linus R.; and Polis, Marjorie J., 4,436,185, Cl. 187-29.00R.

Dismukes, Newton B. Thrust generator for boring tools. 4,436,168, Cl. 175-94.000.

Dobhan, Herbert: *See*—
Horling, Peter; Hetterich, Hermann; Dobhan, Herbert; and Klupfel, Norbert, 4,435,889, Cl. 29-148.40C.

Dobkin, Igor I.: *See*—
Shevakin, Jury F.; Dobkin, Igor I.; Donskoi, Efim M.; Manov, Grigory L.; Zhdanov, Vasily V.; Berger, Elena S.; Popov, Valery M.; Pavlov, Alexei A.; and Akchurin, Rashid Z., 4,435,886, Cl. 29-33.00D.

Doctor, Alan P., to Eltec Instruments, Inc. Differential pyroelectric sensor with static discharge. 4,437,003, Cl. 250-338.000.

Dodge, Marlow W.: *See*—
Johnson, Arthur L., Jr.; and Dodge, Marlow W., 4,436,227, Cl. 222-382.000.

Doery, Michael S.; Hanzlik, Edward W. C.; Adamek, John A.; and McLaughlin, William J., to Xerox Corporation. Document restack transport. 4,436,301, Cl. 271-177.000.

Dohi, Takashi: *See*—
Shinozaki, Nozomu; Neki, Shigeo; and Dohi, Takashi, 4,437,061, Cl. 324-166.000.

Dolan, John E. Automatic toilet bowl cleaning device. 4,435,858, Cl. 4-228.000.

Dollhausen, Manfred: *See*—
Neuhaus, Karl-Friedrich; Muller-Albrecht, Horst; Dollhausen, Manfred; and Perrey, Hermann, 4,436,570, Cl. 156-273.300.

Donahue, Gordon J., to Voplex Corporation. Pin support and mold for foaming and curing resin exterior over ball core. 4,436,276, Cl. 249-91.000.

Donato, Anthony C.; and Russo, Neil, to Lightolier Incorporated. Lighting fixture with snap replaceable bulb feature. 4,437,142, Cl. 362-226.000.

Donelan, Edward J., to United States of America, Air Force. Optical scanner for use in confined areas. 4,436,260, Cl. 244-3.160.

Donnelly, Bernard J., to Thorburn Technics (International) Limited. Eddy current testing apparatus including a two coil probe having sandwiched windings. 4,437,062, Cl. 324-238.000.

Donnelly Mirrors, Inc.: *See*—
Wood, Denis; Thomas, John F., Jr.; and Dipper, Barry, 4,436,371, Cl. 350-281.000.

Donner, Siegmar; Strempler, Gunter; and Schmid, Manfred, to Kleindienst GmbH & Co.; and KG Maschinenfabrik. Sheet feeder. 4,436,298, Cl. 271-10.000.

Donskoi, Efim M.: *See*—
Shevakin, Jury F.; Dobkin, Igor I.; Donskoi, Efim M.; Manov, Grigory L.; Zhdanov, Vasily V.; Berger, Elena S.; Popov, Valery M.; Pavlov, Alexei A.; and Akchurin, Rashid Z., 4,435,886, Cl. 29-33.00D.

Dorman, John G.; Balbo, Anthony M.; Randall, Charles E.; and Sette, Robert A., to Westinghouse Electric Corp. Elevator system. 4,436,184, Cl. 187-29.00R.

Dornier System GmbH: *See*—
Schmidt, Gunther; and Etzler, Carl-Christian, 4,436,259, Cl. 244-3.100.

Douglas, George H.: *See*—
Studt, William L.; Zimmerman, Harry K.; and Douglas, George H., 4,436,911, Cl. 546-291.000.

Dow Chemical Company, The: *See*—
Davis, Roy A.; and Madison, Norman L., 4,436,789, Cl. 428-537.000.
Janiga, Eugene R., 4,436,875, Cl. 525-385.000.

Dow Corning Corporation: *See*—
Mikami, Ryuzo; and Nakasuji, Katsuyoshi, 4,436,787, Cl. 428-447.000.

Dowd, Dorothy N., legal representative: *See*—
Dowd, Edward J., deceased; and Carpency, Joseph F., 4,436,540, Cl. 62-30.000.

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Downey, Robert C., Jr., to Harsco Corporation. Insulated slat. 4,436,136, Cl. 160-232.000.

Dragerwerk Aktiengesellschaft: *See*—
Blumcke, Alfred; Fischer, Peter; and Vahlensieck, Hans-Joachim, 4,436,823, Cl. 436-169.000.

Dran, Maurice; and Jamet, Bernard, to Saint Gobain Vitrage. Device for manufacturing a heating glass plate. 4,436,575, Cl. 156-433.000.

Dravo Corporation: *See*—
Jaquay, Louis H.; and Venetti, Mark, 4,436,611, Cl. 208-11.00R.

Drocco, Amabile, to Sancassiano S.p.A. Kneading machine. 4,436,432, Cl. 366-95.000.

Drori, Michael. Method of manufacturing level vials. 4,436,686, Cl. 264-163.000.

Ducon Company, Inc., The: *See*—
Caldwell, Lawrence G., 4,436,459, Cl. 406-181.000.

Dufour, Philippe; Predali, Jean-Jacques; Ranchin, Guy, deceased; by Ranchin, Marc, legal heir; and by Ranchin, Genevieve, legal heir. Process for the beneficiation of phosphate ores. 4,436,616, Cl. 209-3.000.

Dugal, Jeffrey N., to Ball Corporation. Multilayer tubular body with uncentered barrier layer. 4,436,778, Cl. 428-36.000.

Dunlop Limited: *See*—
Biggs, Ian; and Goy, Ronald S., 4,436,774, Cl. 427-40.000.

Du Pont de Nemours, E. I., and Company: *See*—
Abramson, Edward A., 4,436,366, Cl. 350-96.200.
Brixius, Darryl W.; and Simms, John A., 4,436,885, Cl. 526-214.000.
Copple, Kerry J., 4,436,888, Cl. 526-348.100.
Ho, Chungfah H., 4,436,782, Cl. 428-402.000.

Dupont, Francois: *See*—
Hunaut, Roger; and Dupont, Francois, 4,437,110, Cl. 358-41.000.

Dupraz, Jean-Pierre, to Societe Anonyme dite: Alsthom-Atlantique. Discharge circuit for rapidly eliminating charge trapped in a capacitor voltage divider used for monitoring high voltage AC. 4,437,134, Cl. 361-56.000.

Duracell Inc.: *See*—
Karpiloff, Kenneth M., 4,436,777, Cl. 428-36.000.

Dwire, Jerold D.: *See*—
Demke, Kent R.; and Dwire, Jerold D., 4,437,167, Cl. 364-900.000.

Dyck, Walter R.; and Hay, Burns R., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Portable digital heart rate meter/stethoscope. 4,436,096, Cl. 128-689.000.

E.N.I. Ente Nazionale Indrocarburi: *See*—
Canella, Marco; and Sodini, Giancarlo, 4,436,756, Cl. 426-430.000.

Eads, Harold O.; and Fowler, Ronald R., to O. Ames Co. Hose hanger. 4,436,267, Cl. 248-75.000.

Eagle-Picher Industries, Inc.: *See*—
Long, Robert C.; and Peters, Richard K., 4,436,574, Cl. 156-415.000.

Eastman Kodak Company: *See*—
Barbee, Robert B.; and Davis, Burns, 4,436,895, Cl. 528-288.000.
Evans, Steven; and Elwood, James K., 4,436,799, Cl. 430-17.000.
Kindt, Robert J., 4,436,405, Cl. 355-3.0TR.
Simmons, William J.; and Tinder, Richard, 4,436,404, Cl. 355-3.0SH.

Eaton Corporation: *See*—
Hastings, Jerome K., 4,437,079, Cl. 335-170.000.
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Ebata, Yoshikazu: *See*—
Hanyu, Susumu; and Ebata, Yoshikazu, 4,436,042, Cl. 112-217.100.
Ebato, Seigo: *See*—
Iguchi, Shigeru; and Ebato, Seigo, 4,436,805, Cl. 430-248.000.
Ebi, Yutaka; Fukazawa, Takao; Kawakubo, Toshio; Jinnai, Koichiro; Horike, Masanori; Iwasaki, Kyuhachiro; Ishikawa, Chuji; and Hirata, Toshitaka, to Ricoh Company, Ltd. Ink jet printing apparatus. 4,437,101, Cl. 346-75.000.
Ebisawa, Masuo; and Suzuki, Tetsuya, to Honda Giken Kogyo Kabushiki Kaisha. Method of charging molten metal into a vertical die casting machine. 4,436,140, Cl. 164-120.000.
Echte, Adolf: *See*—
Hinselmann, Klaus; Naarmann, Herbert; Echte, Adolf; Heil, Eduard; Nikles, Albert; Reffert, Rudi W.; and Hambrecht, Juergen, 4,436,870, Cl. 525-53.000.
Edamatsu, Mitisuke: *See*—
Nakazima, Atushi; Edamatsu, Mitisuke; and Kushi, Kenji, 4,436,764, Cl. 427-54.100.
Edano, Shigeki: *See*—
Taniguchi, Yoshiharu; Edano, Shigeki; and Akiyama, Masanori, 4,437,002, Cl. 250-338.000.
Edelman, Robert R.: *See*—
Koslow, Evan E.; and Edelman, Robert R., 4,437,007, Cl. 250-366.000.
Edward, Robert M., Jr., to J B Development Corporation. Apparatus and method for cutting a flat surface on a metallic member. 4,435,975, Cl. 73-81.000.
Edward, Robert M., Jr., to J B Development Corporation. Apparatus for measuring the hardness properties of materials. 4,435,976, Cl. 73-83.000.
Edwards, Arnold G., to Halliburton Company. Hydraulic setting tool. 4,436,149, Cl. 166-120.000.
Egami, Kazuhito: *See*—
Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito, 4,437,029, Cl. 310-198.000.
Eggebrecht, Lewis C.: *See*—
Dean, Mark E.; Eggebrecht, Lewis C.; Kummer, David A.; and Saenz, Jesus A., 4,437,092, Cl. 340-703.000.
Egli, Hermann: *See*—
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Ehrhart, Wendell A., to Armstrong World Industries, Inc. Process for preparing plasticized polyvinyl chloride substrates comprising a moisture-cured polyurethane coating and the products resulting therefrom. 4,436,784, Cl. 428-423.100.
Eisele Apparate-und Geratebau GmbH: *See*—
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Eisele, Hermann; Moller, Heinz; and Schmitt, Manfred, to Robert Bosch GmbH. Device for generating control signals with a primary control unit and an auxiliary control unit. 4,437,154, Cl. 364-187.000.
Ekin, John W.; Gavaler, John R.; and Braginski, Aleksander I., to United States of America, Air Force; and United States of America, Air Force. Method and apparatus utilizing crystalline compound superconducting elements having extended strain operating range capabilities without critical current degradation. 4,437,080, Cl. 335-216.000.
Elastogran GmbH: *See*—
Zipp, Otmar; Bollmann, Heinz; Stutz, Herbert; and Scholz, Wolfgang, 4,436,869, Cl. 525-51.000.
Electric Power Research Institute, Inc.: *See*—
Emery, Franklin T., 4,437,083, Cl. 336-65.000.
Elephant Chain Block Company Limited: *See*—
Tsuda, Kinji, 4,436,333, Cl. 294-82.00R.
Eli Lilly and Company: *See*—
Hall, David A., 4,436,596, Cl. 204-59.00R.
Hershberger, Charles L.; and Rosteck, Paul R., Jr., 4,436,815, Cl. 435-172.000.
Kirst, Herbert A., 4,436,733, Cl. 424-180.000.
Krumkalns, Eriks V., 4,436,739, Cl. 424-246.000.
Ose, Earl E., 4,436,734, Cl. 424-181.000.
Thibault, Thomas D., 4,436,549, Cl. 71-90.000.
Wheeler, William J., 4,436,912, Cl. 548-233.000.
Elkins, Stephen: *See*—
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Ellis, David G.: *See*—
Slack, Ian D.; Ellis, David G.; and Firth, Colin, 4,436,564, Cl. 156-42.000.
Ellis, Edward J.; and Salamone, Joseph C., to Polymer Technology Corporation. Ionic opthalmic cellulose polymer solutions. 4,436,730, Cl. 424-180.000.
Ellison, Elmer L. Mop head installation tool. 4,436,332, Cl. 294-1.00R.
Elliston, Thomas L., to Hydra-Rig, Inc. Truck operator's cab with equipment control station. 4,436,177, Cl. 180-324.000.
Ellsworth, Eugene W. Valve assembly. 4,436,108, Cl. 137-375.000.
Elmore, Carl L., to Kamyr, Inc. Method of producing kraft pulp using an acid prehydrolysis and pre-extraction. 4,436,586, Cl. 162-19.000.
Eltec Instruments, Inc.: *See*—
Doctor, Alan P., 4,437,003, Cl. 250-338.000.
Elwood, James K.: *See*—
Evans, Steven; and Elwood, James K., 4,436,799, Cl. 430-17.000.
Emery, Franklin T., to Electric Power Research Institute, Inc. Current transformer for turbine generators. 4,437,083, Cl. 336-65.000.
Emery, Leonard W., to Atlantic Richfield Company. Drain hole drilling. 4,436,165, Cl. 175-61.000.
Emi, Toshihiko: *See*—
Sakuraya, Toshikazu; Nakamura, Hideo; Harada, Nobuo; Fujii, Tetsuya; and Emi, Toshihiko, 4,436,287, Cl. 266-47.000.
Emoto, Masami, to Ricoh Company, Ltd. Exposure process for use in a variable magnification copying machine. 4,436,415, Cl. 355-55.000.
Emura, Koji; Suzuki, Tuneo; and Kazama, Hidemichi, to Yamakawa Industrial Company, Limited. Continuous press forming method for sheet resin. 4,436,685, Cl. 264-148.000.
Endo, Akira, to Godo Shusei Co., Ltd. Physiologically active novel substance mutastein and process for its production. 4,436,725, Cl. 424-116.000.
Endo, Haruyoshi: *See*—
Makimoto, Mitsuo; Endo, Haruyoshi; Kikuchi, Ko; and Yamashita, Sadahiko, 4,437,076, Cl. 333-206.000.
Endo, Kiyonobu; and Nose, Noriyuki, to Canon Kabushiki Kaisha. Device for splitting part of light incident on an image forming optical system. 4,436,398, Cl. 354-476.000.
Endoh, Koichi; Tsuji, Nobuhiko; Nakamura, Keijiroh; Hamada, Toshiyoshi; and Ishida, Keiichi, to Fuji Electric Co., Ltd. Process of calibrating a blood sugar analyzing apparatus. 4,436,812, Cl. 435-14.000.
Endoh, Noboru: *See*—
Maruhashi, Kenji; Kojima, Ichiro; Oguchi, Yutaka; Endoh, Noboru; and Satoh, Tetsuo, 4,436,663, Cl. 260-245.910.
Energy Equipment Co. Ltd.: *See*—
Cross, Henry F.; and Harman, Maurice, 4,436,057, Cl. 122-4.00D.
Engelhard Corporation: *See*—
Adlhart, Otto J., 4,436,793, Cl. 429-17.000.
Englebert, Stephen M.: *See*—
Hotchkiss, Harry W.; Notheis, Patrick J.; and Englebert, Stephen M., 4,436,780, Cl. 428-198.000.
Engler, Donald J.: *See*—
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Enoguchi, Yuji: *See*—
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Enoxy Chimica, S.p.A.: *See*—
Carbonaro, Antonio; and Ripani, Luciano, 4,436,884, Cl. 526-111.000.
Enterra Corporation: *See*—
Purvis, Fay A.; Bennett, Robert W.; and Ruth, Roger A., 4,436,487, Cl. 417-46.000.
Enzer, Steven E.; and Sarrine, Robert J., to Transidyne General Corporation. Apparatus for measuring electrochemical activity. 4,436,610, Cl. 204-400.000.
Epson Corporation: *See*—
Koto, Haruhiko, 4,436,439, Cl. 400-126.000.
Erdmannsdorfer, Hans; Wagner, Manfred; and Weyh, Gerd, to Filterwerk Mann & Hummel GmbH. Method and device for removing soot from exhaust gases. 4,436,535, Cl. 55-96.000.
Ergler, James M.; Kohn, Harold; and Smetana, Michael, to International Business Machines Corporation. Centripetal cutter and stripper apparatus. 4,436,001, Cl. 81-9.510.
Erhardt, Rolf: *See*—
Stahlecker, Fritz; Lang, Kurt; and Erhardt, Rolf, 4,435,952, Cl. 57-18.000.
Erickson, Eric D., to University of Nebraska, The Board of Regents of the. Autoclavable pipette jar and method of using it. 4,436,700, Cl. 422-102.000.
Erickson, John W.: *See*—
Peterson, Daniel G.; and Erickson, John W., 4,436,492, Cl. 417-386.000.
Erickson, Leland E. Multi-row crop harvesting attachment. 4,435,946, Cl. 56-15.600.
Ernst, Horst M.; Brandenstein, Manfred; Walter, Lothar; and Olschewski, Armin, to SKF Kugellagerfabriken GmbH. Method for production of plastic extrusion-coated bearing races for rolling bearings and bearing races produced thereby. 4,435,890, Cl. 29-148.40R.
Erven Dr. Hubertus Josephus van Doorne: *See*—
van Doorne, Hubertus J., deceased, 4,435,997, Cl. 74-796.000.
Erwin Sick GmbH Optik-Elektronik: *See*—
Lauer, Reinhard; and Pfefferle, Dietmar, 4,436,364, Cl. 350-6.600.
Escher Wyss Aktiengesellschaft: *See*—
Schuwerk, Wolfgang, 4,435,971, Cl. 72-243.000.
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, to Didier-Werke AG. Process for producing granular, fire-resistant material. 4,436,680, Cl. 264-60.000.
Eseifan, Ali H., to Sherwood Medical Company. Reagent mixing system and method. 4,436,822, Cl. 436-164.000.
Estabrook, Lawrence E.; and Suggitt, Robert M., to Texaco Development Corporation. Synthesis gas from slurries of solid carbonaceous fuels. 4,436,531, Cl. 48-197.00R.
Estad Products, Inc.: *See*—
Hird, Richard E., 4,435,939, Cl. 52-582.000.
Estel Hoogovens BV: *See*—
van den Bemt, Johannes C., 4,436,508, Cl. 432-214.000.
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Maltz, Javier E., 4,436,731, Cl. 424-18.000.
Ethyl Corporation: *See*—
Sanders, Robert N., 4,436,708, Cl. 423-329.000.

Etoh, Yukihiro: *See*—
Tanaka, Toshiaki; Ushimura, Shoji; and Etoh, Yukihiro, 4,436,060, Cl. 123-41.100.
Etzler, Carl-Christian: *See*—
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Evans, Jeffrey L., to Ting Enterprises, Inc. Fireplace and stove apparatus. 4,436,080, Cl. 126-139.000.
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Everest & Jennings, Inc.: *See*—
Brudermann, Uwe; Kunze, Karl-H.; Krehl, Gunter; Linde, E. Volker; and Lorenz, Dieter R., 4,436,320, Cl. 280-242.0WC.
Evreka, Inc.: *See*—
Cerami, Anthony, 4,436,094, Cl. 128-635.000.
Ex-Cell-O Corporation: *See*—
Powell, Thomas A., 4,436,460, Cl. 408-14.000.
Extraversion, Inc.: *See*—
Ytter, Willy, 4,436,135, Cl. 160-135.000.
Exxon Production Research Co.: *See*—
Reed, Don C., 4,436,450, Cl. 405-171.000.
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Dowd, Edward J., deceased; and Carpency, Joseph F., 4,436,540, Cl. 62-30.000.
Feng, Tom; and Ghosh, Amal K., 4,436,765, Cl. 427-74.000.
Lipko, Robert J.; and Laurent, Douglas J., 4,436,520, Cl. 604-385.000.
Oyekan, Soni O.; and Swan, George A., 4,436,612, Cl. 208-65.000.
Walker, Thad O.; and Matthews, Patricia C., 4,436,638, Cl. 252-8.55R.
Wright, Franklin J., 4,436,834, Cl. 502-201.000.
Fahlstrom, Per A. H. H.; and Gorling, Karl G., to Boliden Aktiebolag. Method for removing sulphur in conjunction with the gasification of carbonaceous material in metal smelts. 4,436,529, Cl. 48-197.00R.
Faillace, Louie M., to Crompton & Knowles Corporation. Extrusion drive control system. 4,437,046, Cl. 318-571.000.
Faktor, Marc M.: *See*—
Moss, Rodney H.; and Faktor, Marc M., 4,436,769, Cl. 427-252.000.
Farmer, Felta C., Jr.; and Knight, Donald P., to RCA Corporation. Drive level control system for testing kinescopes. 4,437,120, Cl. 358-139.000.
Farmhand, Inc.: *See*—
Lenertz, John B.; and Moore, Carroll E., 4,436,477, Cl. 414-723.000.
Farr, Elvin L.: *See*—
Boodman, Norman S.; Farr, Elvin L.; Osterholm, Robert J.; and Green, Neulan B., III, 4,436,615, Cl. 208-177.000.
Farr, Glyn P. R., to Lucas Industries Limited. Hydraulic power boosters for vehicle hydraulic systems. 4,435,960, Cl. 60-547.100.
Farr, Glyn P. R., to Lucas Industries Limited. Anti-skid hydraulic braking systems for vehicles. 4,436,348, Cl. 303-115.000.
Farrand Optical Co., Inc.: *See*—
LaRussa, Joseph A., 4,437,114, Cl. 358-101.000.
Fauland, Erich; Kampe, Wolfgang; Stach, Kurt; and Bartsch, Wolfgang, to Boehringer Mannheim GmbH. 4-Hydroxy-2,1,3-benzthiadiazole compounds and β-adrenergic method of use therefor. 4,436,742, Cl. 424-269.000.
Fearnot, Neal E.: *See*—
Cook, William A.; Fearnot, Neal E.; and Geddes, Leslie A., 4,436,092, Cl. 128-419.0PG.
Featherby, Michael: *See*—
Dietz, Raymond L.; Featherby, Michael; and Margetts, Peter K., 4,436,785, Cl. 428-427.000.
Feinberg, Jay H.; and Knowles, Terrance, to Zenith Radio Corporation. Method for plating dielectric elements in an isolator and for assembling the isolator. 4,436,240, Cl. 228-122.000.
Feinman, Harvey M.: *See*—
Albert, Gordon H.; and Feinman, Harvey M., 4,436,991, Cl. 235-468.000.
Feng, Tom; and Ghosh, Amal K., to Exxon Research and Engineering Co. Method for forming indium oxide/n-silicon heterojunction solar cells. 4,436,765, Cl. 427-74.000.
Ferenczi, Gyorgy; Horvath, Peter; Toth, Ferenc; Kiss, Jozsef; and Boda, Janos, to Magyar Tudomanyos Akademia Muszaki Fizikai Kutato Intezete. Method for deep level transient spectroscopy scanning and apparatus for carrying out the method. 4,437,060, Cl. 324-158.00D.
Fergason, James L. Light modulator, demodulator and method of communication employing the same. 4,436,376, Cl. 350-332.000.
Ferguson, Harry D., to General Signal Corporation. Electrical simulation of percussive bell. 4,437,088, Cl. 340-384.00E.
Fernandez, David, to American Sports Equipment. Composite reinforced racket structure. 4,436,305, Cl. 273-73.00C.
Ferrighi, Antonietta, to Acea Manodomestici S.r.l. Household handdevice for use as meat-presser to shape mincement into steaks. 4,436,499, Cl. 425-195.000.
Fessock, Paul J.: *See*—
Zmoda, Barney J.; and Fessock, Paul J., 4,436,525, Cl. 44-7.300.
Fiat Veicoli Industriali S.p.A.: *See*—
Formia, Antonio; and Filtri, Giorgio, 4,436,066, Cl. 123-193.00H.
Fides Treuhand GmbH: *See*—
Mohr, Ernst, 4,435,959, Cl. 60-512.000.
Field, Martin J.: *See*—
Atkins, Terrance J.; and Field, Martin J., 4,436,112, Cl. 137-510.000.
Fields, Ellis K.; and Clarke, William C., to Standard Oil Company (Indiana). Photochemical method for preparing low molecular weight olefin polymers and copolymers of 3-butene-1-ol. 4,436,940, Cl. 568-857.000.
Figgie International Inc.: *See*—
Mitchell, Hal D.; and Walker, Donald R., 4,435,851, Cl. 2-2.000.
Filterwerk Mann & Hummel GmbH: *See*—
Erdmannsdorfer, Hans; Wagner, Manfred; and Weyh, Gerd, 4,436,535, Cl. 55-96.000.
Filtri, Giorgio: *See*—
Formia, Antonio; and Filtri, Giorgio, 4,436,066, Cl. 123-193.00H.
Fine, Dwight A.: *See*—
Miles, Melvin H.; and Fine, Dwight A., 4,436,590, Cl. 204-1.00T.
Finger, John F., to Sioux Steam Cleaner Corporation. Cleaning apparatus. 4,436,113, Cl. 137-565.000.
Finnieston, Alan. Upper arm brace. 4,436,088, Cl. 128-77.000.
Firestone Tire & Rubber Company, The: *See*—
Balbis, Manuel G.; and King, Colin V., 4,436,127, Cl. 152-209.00R.
Firth, Colin: *See*—
Slack, Ian D.; Ellis, David G.; and Firth, Colin, 4,436,564, Cl. 156-42.000.
Fischer, Dirk: *See*—
Magnus, Wolf; Braach, Otto; Fischer, Dirk; and Wippig, Werner, 4,436,448, Cl. 405-143.000.
Fischer, Horst; and Mollring, Friedrich K., to Carl-Zeiss-Stiftung. Specimen holder for inverted microscopes. 4,436,385, Cl. 350-529.000.
Fischer, Peter: *See*—
Blumcke, Alfred; Fischer, Peter; and Vahlensieck, Hans-Joachim, 4,436,823, Cl. 436-169.000.
Fischer, Rolf: *See*—
Weitz, Hans-Martin; Fischer, Rolf; and Pohl, Hans H., 4,436,944, Cl. 585-408.000.
Fischer, Werner K., to Swiss Aluminium Ltd. Anode superstructure of a fused salt electrolytic cell and pot room fitted out with same. 4,436,607, Cl. 204-246.000.
Fish, Joe W., to RCA Corporation. System for controlling indicators for switches. 4,437,094, Cl. 340-825.500.
Fisher, Ernest P., Jr.; and Welch, William R., to Otis Engineering Corporation. Shifting tool. 4,436,152, Cl. 166-214.000.
Fitzpatrick, Donald C.: *See*—
Frye, Kenneth G.; Fitzpatrick, Donald C.; and Karis, Arthur T., 4,436,302, Cl. 271-202.000.
Flex-Kleen Corporation: *See*—
Robinson, James W., 4,436,536, Cl. 55-341.00R.
Flies, William P., to Datakey, Inc. Electronic key. 4,436,993, Cl. 235-382.000.
Flood, Paul W.; Mason, Charles D.; and Schulze, Stephen R., to Allied Corporation. High impact molding compositions. 4,436,872, Cl. 525-179.000.
Flow Industries, Inc.: *See*—
Mercer, John E.; Olsen, John H.; and Elkins, Stephen, 4,435,902, Cl. 30-296.00R.
FMC Corporation: *See*—
Jennerjohn, Dennis A.; and Jensen, Lyle B., 4,436,169, Cl. 180-89.140.
Scherrer, Edward P., 4,436,444, Cl. 403-24.000.
Foglesong, Robert M.: *See*—
Arden, Terry D.; and Foglesong, Robert M., 4,436,024, Cl. 99-421.0HV.
Follet, Michel: *See*—
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,436,874, Cl. 525-327.100.
Folsom, Jerry B.: *See*—
Christopher, Chris J.; Wenninger, Fred W., Morris, Donald E.; Covington, Wayne F.; Folsom, Jerry B.; Beyers, Joseph W.; Nairn, John H.; and Osborne, Jeffrey C., 4,437,156, Cl. 364-200.000.
Fondacci, Jean-Luc, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.). Device to regulate the flow rate of a liquid fuel supply system of a gas turbine engine. 4,435,957, Cl. 60-39.281.
Fonio, Carlo, to Rockwell International Corporation. Feeder device for folding machines. 4,436,296, Cl. 270-31.000.
Forgac, John M.; and Hoekstra, Gerald B., deceased (by Hoekstra, Edith, executrix), to Standard Oil Company (Indiana). In situ retorting of oil shale with pulsed combustion. 4,436,344, Cl. 299-2.000.
Formia, Antonio; and Filtri, Giorgio, to Fiat Veicoli Industriali S.p.A. Cylinder head for compression-ignition internal combustion engine. 4,436,066, Cl. 123-193.00H.
Fortune, William S. Modular storage system. 4,436,355, Cl. 312-270.000.
Foshee, William R.: *See*—
Best, Walter E.; and Foshee, William R., 4,435,967, Cl. 70-224.000.
Foss, Susan K.: *See*—
Hurt, James J.; and Foss, Susan K., 4,437,151, Cl. 364-571.000.
Foster Wheeler Energy Corporation: *See*—
Stewart, Robert D.; and Gamble, Robert L., 4,436,507, Cl. 431-170.000.
4-D Electronics Company, Inc.: *See*—
Dick, Neil M., 4,436,103, Cl. 133-3.00D.
Fournex, Robert: *See*—
Christidis, Yani; and Fournex, Robert, 4,436,752, Cl. 424-317.000.

Fowler, Ronald R.: *See*—
Eads, Harold O.; and Fowler, Ronald R., 4,436,267, Cl. 248-75.000.

Fraunhofer-Gesellschaft zur Foerderung der Angewandten Forschung E.V.: *See*—
Fuchs, Helmut V.; Schupp, Gerold; and Voigtsberger, Carl-Alexander, 4,435,974, Cl. 73-40.50A.

Frederick, Roger A.; and Moody, Jerry W., to Monsanto Company. Method of regulating concentration and distribution of oxygen in Czochralski grown silicon. 4,436,577, Cl. 156-617.0SP.

Fredrickson, Sherman E., to Halliburton Company. Method of treating well formations employing foamed treatment fluids. 4,436,156, Cl. 166-307.000.

Freeouf, John L.; Haag, William J.; and Woodall, Jerry M., to International Business Machines Corporation. Refractory structure and process for the preparation thereof. 4,436,768, Cl. 427-227.000.

Freimuth, John H.; and Campbell, Willis R., to Sperry Corporation. Stripper bar for roll baling machine. 4,436,027, Cl. 100-88.000.

French, James C.: *See*—
Smitka, Tim A.; Bunge, Richard H.; French, James C.; and Bloem, Russell J., 4,436,750, Cl. 424-279.000.

Frey, John A., to Hoff-Stevens, Inc. Keg tapping apparatus having improved retainer. 4,436,228, Cl. 222-400.700.

Freyrie, Leonardo, to AMF Inc. Boom for sailboards. 4,436,047, Cl. 114-102.000.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See*—
Friedrich, Ronald; and Muller, Manfred, 4,436,697, Cl. 420-440.000.

Friedrich, Ronald; and Muller, Manfred, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Soldering alloy. 4,436,697, Cl. 420-440.000.

Friends, Gary D.: *See*—
Chromecek, Richard C.; Friends, Gary D.; Wissman, Lawrence Y.; and Yourd, Raymond A., III, 4,436,887, Cl. 526-263.000.

Frito-Lay, Inc.: *See*—
Wisdom, Lawrence W.; and Wilson, Gordon R., 4,436,458, Cl. 406-135.000.

Fritzenwenger, Josef, to Bayerische Motoren Werke Aktiengesellschaft. Engine driven pump arrangement. 4,436,067, Cl. 123-198.00C.

Frohberger, Paul-Ernst: *See*—
Holmwood, Graham; Lurssen, Klaus; and Frohberger, Paul-Ernst, 4,436,907, Cl. 544-335.000.

Fry, Michael W.: *See*—
Shennan, Christopher D.; and Fry, Michael W., 4,436,798, Cl. 430-17.000.

Fryberg, Mario; and Weiss, Viktor, to Ciba-Geigy AG. Photographic material. 4,436,811, Cl. 430-564.000.

Frye, Kenneth G.; Fitzpatrick, Donald C.; and Karis, Arthur T., to Beloit Corporation. Apparatus for slowing down and preventing edge damage on moving sheets. 4,436,302, Cl. 271-202.000.

Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, to Hoffmann-La Roche Inc. Pyrrolo[3,4-d][2]benzazepinones. 4,436,662, Cl. 260-245.700.

Frymaster Corporation, The: *See*—
Waugh, Gerald F., 4,437,159, Cl. 364-400.000.

Fuchs, Helmut V.; Schupp, Gerold; and Voigtsberger, Carl-Alexander, to Fraunhofer-Gesellschaft zur Foerderung der Angewandten Forschung E.V. Method and apparatus for locating leakages in pipes and similar conduits. 4,435,974, Cl. 73-40.50A.

Fuji Electric Co., Ltd.: *See*—
Endoh, Koichi; Tsuji, Nobuhiko; Nakamura, Keijiroh; Hamada, Toshiyoshi; and Ishida, Keiichi, 4,436,812, Cl. 435-14.000.
Watanabe, Atsuo; and Uno, Masahiro, 4,436,428, Cl. 356-432.000.

Fuji Photo Film Co., Ltd.: *See*—
Akao, Mutsuo; and Kawata, Tadashi, 4,436,809, Cl. 430-501.000.
Ishiyama, Masashi; and Ishibashi, Michinori, 4,436,491, Cl. 417-385.000.
Ohtsuka, Shuichi; and Aotsuka, Yasuo, 4,436,802, Cl. 430-100.000.
Sato, Kozo; Iwakura, Ken; and Igarashi, Akira, 4,436,920, Cl. 549-227.000.
Yagihara, Morio; Hirano, Tsumoru; and Mihayashi, Keiji, 4,436,808, Cl. 430-381.000.

Fuji Xerox Co., Ltd.: *See*—
Inui, Toshiharu; and Moriguchi, Haruhiko, 4,437,102, Cl. 346-76.0PH.

Fujii, Hiroshi: *See*—
Imamura, Yoshinobu; Kamei, Shigeki; Yamagata, Tetuo; and Fujii, Hiroshi, 4,436,026, Cl. 100-45.000.

Fujii, Takumi: *See*—
Miura, Mituo; Kukino, Yoshinori; and Fujii, Takumi, 4,436,453, Cl. 405-263.000.

Fujii, Tetsuya: *See*—
Sakuraya, Toshikazu; Nakamura, Hideo; Harada, Nobuo; Fujii, Tetsuya; and Emi, Toshihiko, 4,436,287, Cl. 266-47.000.

Fujii, Toru: *See*—
Ikari, Kazuo; and Fujii, Toru, 4,436,382, Cl. 350-458.000.

Fujimura, Akira: *See*—
Miyazaki, Naomi; and Fujimura, Akira, 4,436,710, Cl. 423-552.000.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Horii, Isamu, 4,436,205, Cl. 206-530.000.
Umehara, Kazuyoshi; Tanaka, Hirokazu; Uchida, Itsuo; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,436,726, Cl. 424-177.000.

Fujita, Hironori; and Arai, Tohru, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Process for manufacturing boride dispersion copper alloys. 4,436,559, Cl. 148-6.000.

Fujita, Hironori; Arai, Tohru; and Mizuno, Jiro, to Kabushiki Kaisha Toyota Chuo Kenkyusho; and Kabushiki Kaisha Tokai Rika Denki Seisakusho. Process for manufacturing boride dispersion copper alloys. 4,436,560, Cl. 148-6.000.

Fujita, Yoshiji: *See*—
Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Kutaka; Ishigura, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,436,939, Cl. 568-813.000.

Fujitsu Fanuc Limited: *See*—
Nomura, Yoshiyuki; Okuda, Kanemasa; and Ishii, Hitao, 4,436,975, Cl. 219-69.00W.

Fujitsu Limited: *See*—
Asami, Fumitaka, 4,437,072, Cl. 331-1.00A.
Sumi, Hideji; and Kokado, Masayuki, 4,437,021, Cl. 307-270.000.

Fukase, Hiroshi: *See*—
Horii, Satoshi; Fukase, Hiroshi; and Higashide, Eiji, 4,436,918, Cl. 548-546.000.

Fukazawa, Takao: *See*—
Ebi, Yutaka; Fukazawa, Takao; Kawakubo, Toshio; Jinnai, Koichiro; Horike, Masanori; Iwasaki, Kyuhachiro; Ishikawa, Chuji; and Hirata, Toshitaka, 4,437,101, Cl. 346-75.000.

Fukuhara, Seiichi: *See*—
Fukushima, Eiji; Fukuhara, Seiichi; and Hiraga, Masaharu, 4,436,465, Cl. 409-243.000.

Fukuhara, Toru, to Nippon Kogaku K.K. Focus detecting device in a single lens reflex camera. 4,436,395, Cl. 354-406.000.

Fukunaga, Masaaki: *See*—
Takahashi, Nobuyuki; Furuno, Yoshikuni; and Fukunaga, Masaaki, 4,436,561, Cl. 148-12.00F.

Fukuoka, Yohei: *See*—
Koya, Masahiko; and Fukuoka, Yohei, 4,436,945, Cl. 585-488.000.

Fukushima, Eiji; Fukuhara, Seiichi; and Hiraga, Masaharu, to Sanden Corporation. Scroll manufacturing tool. 4,436,465, Cl. 409-243.000.

Fuminier, Claude; and Pierrel, Michel, to Pont-A-Mousson S.A. Ductile cast iron pipe having constricted end casing. 4,435,894, Cl. 29-527.500.

Funada, Fumiaki; Kozaki, Syuichi, Matsuura, Masataka; and Wada, Tomio, to Sharp Kabushiki Kaisha. Two-layer liquid crystal display panel. 4,436,379, Cl. 350-347.00E.

Furth, Harold P.: *See*—
Jardin, Stephen C.; Yamada, Masaaki; Furth, Harold P.; and Okabayashi, Mitcheo, 4,436,691, Cl. 376-137.000.

Furukawa Denchi Kabushiki Kaisha: *See*—
Suzuki, Yuichi; and Sano, Ichiro, 4,435,885, Cl. 29-2.000.

Furukawa Denki Kogyo Kabushiki Kaisha: *See*—
Suzuki, Yuichi; and Sano, Ichiro, 4,435,885, Cl. 29-2.000.

Furukawa, Hiroshi; Saito, Yuichi; Imai, Akio; Yamamoto, Keisaku; Takao, Hiroyoshi; and Yoshida, Nobuyuki, to Sumitomo Chemical Co., Ltd. Conjugated diene block polymer and process for preparing the same. 4,436,873, Cl. 525-314.000.

Furukawa, Hiroyasu: *See*—
Ushioda, Minoru; Ueno, Kenji; Furukawa, Hiroyasu; and Kobayashi, Masahiro, 4,436,861, Cl. 524-425.000.

Furuno, Yoshikuni: *See*—
Takahashi, Nobuyuki; Furuno, Yoshikuni; and Fukunaga, Masaaki, 4,436,561, Cl. 148-12.00F.

Furuoya, Itsuo; and Kitazawa, Yuzuru, to Takeda Chemical Industries, Limited. Process for producing unsaturated aliphatic dinitriles. 4,436,671, Cl. 260-465.300.

G.A. Pfleiderer GmbH & Co., KG: *See*—
Rother, Bruno; and Trommen, Hartmut, 4,436,781, Cl. 428-365.000.

Gach, Peter P., to Sunbeam Plastics Corporation. Safety package. 4,436,211, Cl. 215-216.000.

Gaffal, Karl; and Klepp, Christian, to Klein, Schanzlin & Becker Aktiengesellschaft. System for sealing passages in the walls of glandless circulating pumps or the like. 4,436,950, Cl. 174-11.0BH.

Gaffar, Abdul, to Colgate-Palmolive Company. Oral composition having mole ratio of tetra (methylene phosphonate) to alkali metal fluoride of at least 1.4:1. 4,436,721, Cl. 424-52.000.

Gagliardi, Sergio: *See*—
Masotto, Ermanno; and Gagliardi, Sergio, 4,436,655, Cl. 252-628.000.

Gaither, Dolphard. Tire tool. 4,436,134, Cl. 157-1.300.

Galati, Antonio, to Canadian Gas Research Institute. Flue condensate shield. 4,436,059, Cl. 122-17.000.

Galian, Boris A.: *See*—
Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; Galian, Boris A.; Asoyants, Grigory B.; and Tishura, Vladimir I., 4,436,974, Cl. 219-66.000.

Gallaway, James F.: *See*—
Davenport, Jeanne A.; Campbell, Robert L.; and Gallaway, James F., 4,435,940, Cl. 52-641.000.

Gamble, Robert L.: *See*—
Stewart, Robert D.; and Gamble, Robert L., 4,436,507, Cl. 431-170.000.

Ganguly, Ashit K.; Liu, Yi-Tsung; and Mallams, Alan K., to Schering Corporation. 23-Demycinosyltylosin compounds, pharmaceutical compositions and method of use. 4,436,729, Cl. 424-180.000.

Ganz, Rudolf: *See*—
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, 4,436,680, Cl. 264-60.000.

Garcia, Philippe, to Micro-Mega S.A. Device for fixing drill bits into the head of air motors for hand-held dentists' tools. 4,436,512, Cl. 433-129.000.

Gardiner, James R.; Makarewicz, Stanley R.; Revitz, Martin; and Shepard, Joseph F., to International Business Machines Corporation. Double polysilicon contact structure. 4,437,108, Cl. 357-59.000.

Gardner, Irving. Collar clasp. 4,435,880, Cl. 24-49.0KC.

Garner, Lloyd L., to Globe Oil Tools, Inc. Lubrication failure detection system. 4,436,164, Cl. 175-39.000.
Garnett, Jack L., to Bendix Corporation, The. Method of grinding workpieces. 4,435,924, Cl. 51-327.000.
Garrett Corporation, The: *See—*
Linder, Charles G., 4,436,481, Cl. 415-119.000.
Manfredo, Joseph N.; and Hirsch, Selwyn R., 4,436,145, Cl. 165-67.000.
Garrett, William R., to Smith International, Inc. Sleeved drill pipe. 4,436,118, Cl. 138-110.000.
Gaughan, Perry J.: *See—*
Grotta, Henry M.; and Gaughan, Perry J., 4,436,625, Cl. 210-634.000.
Gaur, Santosh P.; Lechaton, John S.; and Srinivasan, Gurumakonda R., to International Business Machines Corporation. Method for making a base etched transistor integrated circuit. 4,435,898, Cl. 29-577.00C.
Gauthier-Lafaye, Jean; and Perron, Robert, to Rhone-Poulenc Industries. Preparation of carboxylic acids by carbonylation of alcohols. 4,436,889, Cl. 562-519.000.
Gauthier, Michel; Hackett, Peter A.; and Willis, Clive, to Canadian Patents & Development Limited. Laser production of carbon-13 based on CF_2HCl. 4,436,709, Cl. 423-437.000.
Gavaler, John R.: *See—*
Ekin, John W.; Gavaler, John R.; and Braginski, Aleksander I., 4,437,080, Cl. 335-216.000.
Gavrilko, Igor V.: *See—*
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; and Sinelschikov, Andrei K., 4,436,830, Cl. 501-96.000.
Gavrilov, Alexei G.: *See—*
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; and Sinelschikov, Andrei K., 4,436,830, Cl. 501-96.000.
GCA Corporation: *See—*
Bunkenburg, Joachim, 4,436,424, Cl. 356-356.000.
Weber, T. Jerome, 4,436,985, Cl. 219-388.000.
Gebke, Klaus; Huhn, Friedrich; and Lekutat, Rolf, to Kraftwerk Union Aktiengesellschaft. Cooling plant. 4,436,676, Cl. 261-151.000.
Geddes, Leslie A.: *See—*
Cook, William A.; Fearnot, Neal E.; and Geddes, Leslie A., 4,436,092, Cl. 128-419.0PG.
Geisow, Bernard H., to Daniel Industries, Inc. Valve actuator mechanism for lift-turn type valves. 4,436,280, Cl. 251-229.000.
Geissmann, Felix: *See—*
Molnar, Istvan; Thiele, Kurt; Geissmann, Felix; and Jahn, Ulrich, 4,436,913, Cl. 548-316.000.
Geist, Michael: *See—*
Batzill, Wolfgang; Diefenbach, Horst; Geist, Michael; and Schupp, Eberhard, 4,436,878, Cl. 525-438.000.
Gelhard, Egon. Sensor for distance measurement by ultrasound. 4,437,032, Cl. 310-324.000.
General DataComm Industries, Inc.: *See—*
Lambert, David A.; and Profet, Gary A., 4,437,182, Cl. 370-110.100.
Profet, Gary A., 4,437,183, Cl. 370-110.100.
General Electric Company: *See—*
Anthony, Thomas R.; Connery, Richard J.; and Hoeschele, David F., Jr., 4,437,109, Cl. 357-68.000.
Ashby, Bruce A.; and Schroeter, Siegfried H., 4,436,924, Cl. 556-416.000.
Graham, Donald E., 4,436,775, Cl. 427-419.700.
Hepp, Leonard R., 4,436,860, Cl. 524-394.000.
Krantz, Karl W., 4,436,846, Cl. 523-175.000.
Laghi, Aldo A., 4,436,496, Cl. 425-543.000.
Loucks, George R., 4,436,876, Cl. 525-394.000.
Miller, Kenneth F.; and Belfoure, Edward, 4,436,879, Cl. 525-439.000.
Moodie, Eldon E.; and Burns, Richard D., 4,436,585, Cl. 156-73.100.
Morais, Don; and Owen, Daniel V., 4,437,042, Cl. 315-289.000.
Rea, Ike D., 4,436,463, Cl. 409-232.000.
Roberts, Victor D., 4,437,041, Cl. 315-248.000.
Scott, Allen W., 4,435,993, Cl. 74-553.000.
Vaughn, Howard A., Jr., 4,436,851, Cl. 524-43.000.
Whitten, James R., 4,436,995, Cl. 250-227.000.
General Mills, Inc.: *See—*
Lange, Donald A.; Hanson, Marc C.; and Kriva, Kenneth J., 4,436,757, Cl. 426-438.000.
General Motors Corporation: *See—*
Atkins, Terrance J.; and Field, Martin J., 4,436,112, Cl. 137-510.000.
Bowes, Laurence B.; and Gray, Thomas J., 4,436,337, Cl. 296-201.000.
Kuo, Hong-Hsiang, 4,436,037, Cl. 110-245.000.
Vonnegut, George L., 4,436,485, Cl. 416-241.00R.
General Signal Corporation: *See—*
Ferguson, Harry D., 4,437,088, Cl. 340-384.00E.
General Tire & Rubber Company, The: *See—*
Kuan, Tiong H.; and Sommer, John G., 4,436,857, Cl. 524-260.000.
Gentry, Larry L.; Moss, Herbert H.; Panicker, Narayana N.; and Wada, William T., to Mobil Oil Corporation. Rotary transfer subsystems and tensioning assemblies for a process vessel. 4,436,048, Cl. 114-230.000.
GEO Vann, Inc.: *See—*
Brieger, Emmet F., 4,436,155, Cl. 166-297.000.
Vann, Roy R.; and George, Flint R., 4,436,154, Cl. 166-281.000.
Geolograph Company, The: *See—*
Corry, Stuart E.; and Grade, Lanny V., 4,435,988, Cl. 73-862.190.
Georg Fischer Aktiengesellschaft: *See—*
Thalmann, Alfred; and Reich, Fritz, 4,436,987, Cl. 219-535.000.
George, Allan P.: *See—*
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Giulie, Joe D. Multiple position switch. 4,436,968, Cl. 200-5.00R.
Glasser, Fredrik P.; and Gunawardane, Richard P., to National Research Development Corporation. Fertilizer material from apatite. 4,436,546, Cl. 71-36.000.
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Graham, Henry A., Jr.; Hawk, Johnna B.; and Chachowski, Rosemary K., to Ortho Diagnostic Systems Inc. Multiple particle washing system and method of use. 4,436,631, Cl. 210-772.000.
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Haisma, Jan: *See—*
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Hansen, Robert C.; and Novorolsky, Paul G., to Western Electric Company, Inc. System using the telephone network to control locks at a number of remote locations. 4,436,958, Cl. 179-2.00A.
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Harder, Wolfgang; Merger, Franz; and Towae, Friedrich, to BASF Aktiengesellschaft. Preparation of carbonates. 4,436,668, Cl. 260-463.000.
Hare, Alan L.; and George, Allan P., to Tioxide Group PLC. Electric arc discharge apparatus. 4,436,984, Cl. 219-383.000.
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Harmon, William R., Jr., to Bell Telephone Laboratories, Incorporated. Telephone ringing signal generator. 4,436,960, Cl. 179-51.0AA.
Harr, Jost, to Sandoz Ltd. Fungicidal compositions comprising N-amino-2-oxo-3-oxazolidine derivatives and folpet or captan. 4,436,744, Cl. 424-272.000.
Harra, David J.; Turner, Frederick T.; and Hutchinson, Martin A., to Varian Associates, Inc. Blocking shield and method for contouring the thickness of sputter coated layers. 4,436,602, Cl. 204-192.00R.
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Hata, Shuji; Yamada, Toshio; and Murakawa, Katsuji, to Toyo Kogyo Co., Ltd. Automobile transmission casing having reinforcement. 4,435,994, Cl. 74-606.00R.
Hatch, Seymour A.; and Morley, James P., to CR Industries. Two piece seal adapted for simplified installation. 4,436,315, Cl. 277-92.000.
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Hayashi, Motomu; Ishikawa, Atuo; and Yukimoto, Kazuyoshi, to Aisin Seiki Kabushiki Kaisha. Retractable headlamp assembly for automobiles. 4,437,143, Cl. 362-272.000.
Hayashi, Yoshimasa, to Nissan Motor Co., Ltd. Automotive internal combustion engine. 4,436,061, Cl. 123-41.740.
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Hebert, Francis A., to South Louisiana Contractors Inc. Portable pneumatic nail driving apparatus. 4,436,235, Cl. 227-111.000.
Hefling, Dennis V., to Coleman Company, Inc., The. Damper assembly for barbecue grill. 4,436,081, Cl. 126-285.00A.
Hehl, Karl. Potentiometer drive for displacement transducer of reciprocating unit. 4,435,991, Cl. 74-89.200.
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Independent Maching Company: *See*—
Santa Lucia, Jack; and Trapp, Kenneth, 4,436,249, Cl. 242-18.00R.
Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft: *See*—
Pache, Norbert; and Mazac, Karel, 4,436,980, Cl. 219-123.000.
Ing. C. Olivetti & C., S.p.A.: *See*—
Knirsch, Franco, 4,436,801, Cl. 430-73.000.
Simonotti, Lucio; and Motta, Carlo, 4,436,182, Cl. 186-37.000.
Innertsberger, Ernst: *See*—
Pirson, Ewald; Schmidlkofer, Jakob; and Innertsberger, Ernst, 4,436,647, Cl. 252-358.000.
Inoue, Hideya: *See*—
Tomino, Naoki; Ikeda, Osamu; Matsuzawa, Yoshio; and Inoue, Hideya, 4,436,792, Cl. 429-1.000.
Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,436,976, Cl. 219-69.00V.
Inoue, Kazuo; and Otsuka, Tsuneo, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle having an engine with a turbo-supercharger. 4,436,172, Cl. 180-219.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Electroerosion machining method and apparatus with automatic vibrations-sensing electrode wear compensation. 4,436,976, Cl. 219-69.00V.
Inoue, Morio; Hoshino, Satoshi; Namura, Hideki; and Watari, Takashi, to Nippon Kokan Kabushiki Kaisha. Constant ship speed control method. 4,436,482, Cl. 416-1.000.
Institut Elektrosvarki Imeni E.O.Patona Akademii Nauk Ukrainskoi SSR: *See*—
Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; Galian, Boris A.; Asoyants, Grigory B.; and Tishura, Vladimir I., 4,436,974, Cl. 219-66.000.
Intel Corporation: *See*—
Hudson, Edwin L.; and Smith, Stephen L., 4,437,171, Cl. 365-177.000.
Liu, Wei-Ti; and Lee, Douglas J., 4,437,025, Cl. 307-475.000.
Rose, Donald K.; and Silverman, Peter J., 4,436,579, Cl. 156-626.000.
International Business Machines Corporation: *See*—
Bradley, David J., 4,437,093, Cl. 340-726.000.
Brady, Michael J.; Meyerson, Bernard S.; and Warlaumont, John M., 4,436,797, Cl. 430-5.000.
Cork, Robin M. S.; and Rose, David B., 4,437,184, Cl. 371-19.000.
Dean, Mark E.; Eggebrecht, Lewis C.; Kummer, David A.; and Saenz, Jesus A., 4,437,092, Cl. 340-703.000.
Demke, Kent R.; and Dwire, Jerold D., 4,437,167, Cl. 364-900.000.
Depp, Steven W.; and Sincerbox, Glenn T., 4,436,420, Cl. 356-128.000.
Ergler, James M.; Kohn, Harold; and Smetana, Michael, 4,436,001, Cl. 81-9.510.
Freeouf, John L.; Haag, William J.; and Woodall, Jerry M., 4,436,768, Cl. 427-227.000.
Gardiner, James R.; Makarewicz, Stanley R.; Revitz, Martin; and Shepard, Joseph F., 4,437,108, Cl. 357-59.000.
Gaur, Santosh P.; Lechaton, John S.; and Srinivasan, Gurumakonda R., 4,435,898, Cl. 29-577.00C.
Howard, James K., 4,437,139, Cl. 361-313.000.
Kirkman, David H., 4,436,378, Cl. 350-345.000.
Miersch, Eddehard F.; Pollmann, Kurt; Schettler, Helmut; and Zuhlke, Rainer, 4,437,022, Cl. 307-270.000.
Pomerene, James H.; and Rechtschaffen, Rudolph N., 4,437,149, Cl. 364-200.000.
Queener, Carl A., 4,436,409, Cl. 355-14.00R.
Rhodes, John H., Jr.; and Rosati, Alfonso A., 4,436,403, Cl. 355-3.0SH.
International Flavors & Fragrances Inc.: *See*—
Boden, Richard M.; Tyszkiewicz, Theodore J.; and Watkins, Hugh, 4,436,652, Cl. 252-522.00R.
International Harvester Co.: *See*—
Connelly, John J.; and Cellitti, Raymond A., 4,436,289, Cl. 266-80.000.
International Telephone and Telegraph Corporation: *See*—
Haskins, Steve W., 4,436,964, Cl. 179-164.000.
Mazza, Frank J.; and DeFilippis, John, 4,436,957, Cl. 179-2.0EA.
Internationale Octrooi Maatschappij "Octropa" B.V.: *See*—
O'Neill, Terence C., 4,436,014, Cl. 83-762.000.
Inui, Toshiharu; and Moriguchi, Haruhiko, to Fuji Xerox Co., Ltd. Heat-sensitive recording apparatus. 4,437,102, Cl. 346-76.0PH.
Inuzuka, Tsuneki; Ishida, Masato; Tanioka, Hiroshi; and Sakamaki, Hisashi, to Canon Kabushiki Kaisha. Image forming apparatus including power switch operating means. 4,436,408, Cl. 355-14.00R.
Iowa State University Research Foundation, Inc.: *See*—
Larock, Richard C., 4,436,934, Cl. 562-502.000.
Irelan, Robert L. One hand clamping device. 4,436,294, Cl. 269-6.000.
Irving, Edward, to Ciba-Geigy Corporation. Heat-curable epoxide resin compositions. 4,436,880, Cl. 525-504.000.
Ishibai, Isao; and Kobayashi, Kunimitsu, to Hoya Corporation. Binoculars housing. 4,436,386, Cl. 350-550.000.
Ishibashi, Michinori: *See*—
Ishiyama, Masashi; and Ishibashi, Michinori, 4,436,491, Cl. 417-385.000.
Ishida, Keiichi: *See*—
Endoh, Koichi; Tsuji, Nobuhiko; Nakamura, Keijiroh; Hamada, Toshiyoshi; and Ishida, Keiichi, 4,436,812, Cl. 435-14.000.
Ishida, Masato: *See*—
Inuzuka, Tsuneki; Ishida, Masato; Tanioka, Hiroshi; and Sakamaki, Hisashi, 4,436,408, Cl. 355-14.00R.
Ishigura, Michihiro: *See*—
Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Kutaka; Ishigura, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,436,939, Cl. 568-813.000.
Ishii, Hisao: *See*—
Nomura, Yoshiyuki; Okuda, Kanemasa; and Ishii, Hisao, 4,436,975, Cl. 219-69.00W.
Ishii, Isao: *See*—
Nishizako, Shizutaka; Ishii, Isao; and Sakamoto, Yoshiaki, 4,436,831, Cl. 501-119.000.
Ishikawa, Atuo: *See*—
Hayashi, Motomu; Ishikawa, Atuo; and Yukimoto, Kazuyoshi, 4,437,143, Cl. 362-272.000.
Ishikawa, Chuji: *See*—
Ebi, Yutaka; Fukazawa, Takao; Kawakubo, Toshio; Jinnai, Koichiro; Horike, Masanori; Iwasaki, Kyuhachiro; Ishikawa, Chuji; and Hirata, Toshitaka, 4,437,101, Cl. 346-75.000.
Ishiyama, Masashi; and Ishibashi, Michinori, to Fuji Photo Film Co., Ltd.; and Nikkiso Co., Ltd. Method of supplying hydraulic operating fluid in diaphragm type. 4,436,491, Cl. 417-385.000.
Isowa, Yoshikazu; Ohmori, Muncki; Mori, Kaoru; Ichikawa, Tetsuya; Nonaka, Yuji; Kihara, Keiichi; Oyama, Kiyotaka; Satoh, Heijiro; and Nishimura, Shigeaki, to Toyo Soda Manufacturing Co., Ltd.; and Sajami Chemical Research Center. Addition compound of dipeptide derivative and amino acid derivative. 4,436,925, Cl. 560-19.000.
Itek Corporation: *See*—
Hutchin, Richard A., 4,436,417, Cl. 356-4.500.
Ito, Hiroshi: *See*—
Tamama, Hiroshi; Ozawa, Yukio; Miyazaki, Jingo; Ito, Hiroshi; and Kinoshita, Toyohiro, 4,436,313, Cl. 277-80.000.
Itoh, Yuji: *See*—
Takahashi, Junichi; Sakane, Toshio; and Itoh, Yuji, 4,436,388, Cl. 351-206.000.
Itou, Takeo: *See*—
Takahara, Takeshi; Sato, Takeo; Itou, Takeo; and Tamatani, Masaaki, 4,436,646, Cl. 252-301.40S.
Iwai, Fumio: *See*—
Seimiya, Ryubun; Iwai, Fumio; and Nosaka, Isao, 4,436,402, Cl. 355-3.00R.
Iwaisako, Toshiyuki: *See*—
Matsuzaki, Kazuhiko; Iwaisako, Toshiyuki; and Masamoto, Junzo, 4,436,900, Cl. 528-490.000.
Iwakura, Ken: *See*—
Sato, Kozo; Iwakura, Ken; and Igarashi, Akira, 4,436,920, Cl. 549-227.000.
Iwanade, Hisao: *See*—
Negoro, Ikuo; and Iwanade, Hisao, 4,436,416, Cl. 355-57.000.
Iwao, Noriaki; and Abe, Akira, to Tomy Kogyo Co., Inc. Toy vehicle capable of changing size and shape. 4,435,916, Cl. 46-201.000.
Iwasaki, Kyuhachiro: *See*—
Ebi, Yutaka; Fukazawa, Takao; Kawakubo, Toshio; Jinnai, Koichiro; Horike, Masanori; Iwasaki, Kyuhachiro; Ishikawa, Chuji; and Hirata, Toshitaka, 4,437,101, Cl. 346-75.000.
Iwase, Yoshiyuki: *See*—
Umeda, Arihiko; and Iwase, Yoshiyuki, 4,436,891, Cl. 528-111.000.
Iwata, Nobuo, to Ricoh Company, Ltd. Shiftable daisy wheel printer. 4,436,440, Cl. 400-144.200.
Iwayanagi, Takao: *See*—
Saiki, Atsushi; Iwayanagi, Takao; Nonogaki, Saburo; Nishida, Takashi; and Harada, Seiki, 4,436,583, Cl. 156-659.100.
Izaki, Susumu: *See*—
Omae, Takashi; Tanaka, Kisaburoo; Aoki, Masahiro; Hirayama, Fumitoshi; and Izaki, Susumu, 4,436,554, Cl. 75-128.00T.
J. A. Webb, Inc.: *See*—
Sobieniak, Mathew G., 4,436,609, Cl. 204-267.000.
J B Development Corporation: *See*—
Edward, Robert M., Jr., 4,435,975, Cl. 73-81.000.
Edward, Robert M., Jr., 4,435,976, Cl. 73-83.000.
J.C. Schumacher Co.: *See*—
McMenamin, Joseph C., 4,436,674, Cl. 261-64.00B.
J. E. Grote Pepp-A-Matic Co., Inc.: *See*—
Hochanadel, Thomas A., 4,436,012, Cl. 83-703.000.
Jackson, Bernie F.: *See*—
Borner, Willy; and Jackson, Bernie F., 4,435,982, Cl. 73-462.000.
Jackson, Robert R.; and Klink, Jerome P., to Owens-Corning Fiberglas Corporation. Method of and apparatus for simultaneously packaging linear bundles of filaments into individual packages. 4,436,258, Cl. 242-18.00G.
Jacobs, Bernard B.: *See*—
Dahl, James M.; Jacobs, Bernard B.; Lipovac, Joseph E.; Meglen, Ralph A.; and Ward, Donald W., 4,436,497, Cl. 425-28.00R.
Jacobs, Paul T., to Surgikos, Inc. Disinfecting and sterilizing composition. 4,436,754, Cl. 424-333.000.

Jacobs, Pierre; Poncelet, Georges; and Schutz, Alain. Process for the preparation of bridged clays, clays prepared by said process, and uses for said clays. 4,436,832, Cl. 502-84.000.
Jacobsen, Kjell O.; Matre, Tore; Halvorsen, Rolf I.; Heie, Ingar H.; Myhrvold, Erling; and Berger, Ove R., to A/S Raufoss Ammunisjonsfabrikker. Smoke grenade with successive slow and fast burning charges. 4,436,034, Cl. 102-334.000.
Jacobson, Jeff A. Blind cleaning device. 4,435,874, Cl. 15-210.00A.
Jacobson, Ronald L.; and Hanley, Dean C., to Procter & Gamble Company, The. Stable liquid detergent compositions. 4,436,653, Cl. 252-547.000.
Jacques, Roland; Reppelin, Michel; and Seigneurin, Laurent, to Rhone-Poulenc Specialites Chimiques. Preparation of aromatic/aliphatic nitriles. 4,436,669, Cl. 260-465.00B.
Jacquier, Robert: *See*—
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,436,874, Cl. 525-327.100.
Aspisi, Christian; Bonato, Marc; and Jacquier, Robert, 4,436,919, Cl. 549-4.000.
Jagger, James W.: *See*—
Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., 4,437,006, Cl. 250-363.00S.
Jahn, Ulrich: *See*—
Molnar, Istvan; Thiele, Kurt; Geissmann, Felix; and Jahn, Ulrich, 4,436,913, Cl. 548-316.000.
James River/Dixie-Northern, Inc.: *See*—
Kuchenbecker, Morris W., 4,436,206, Cl. 206-625.000.
Jamet, Bernard: *See*—
Dran, Maurice; and Jamet, Bernard, 4,436,575, Cl. 156-433.000.
Janiga, Eugene R., to Dow Chemical Company, The. Curable polymeric compositions. 4,436,875, Cl. 525-385.000.
Janome Sewing Machine Co. Ltd.: *See*—
Hanyu, Susumu; and Ebata, Yoshikazu, 4,436,042, Cl. 112-217.100.
Japan Styrene Paper Corporation: *See*—
Akiyama, Hiroyuki; Shimada, Sumio; Hirosawa, Kuninori; and Kuwabara, Hideki, 4,436,840, Cl. 521-58.000.
Japanese National Railways: *See*—
Tamama, Hiroshi; Ozawa, Yukio; Miyazaki, Jingo; Ito, Hiroshi; and Kinoshita, Toyohiro, 4,436,313, Cl. 277-80.000.
Yamamoto, Tsuyoshi; Taniguchi, Norihisa; Iida, Kazuyoshi; and Kondo, Yoshikazu, 4,436,179, Cl. 181-210.000.
Jaquay, Louis H.; and Venetti, Mark, to Dravo Corporation. Process for heating recycle gas in oil shale retorting. 4,436,611, Cl. 208-11.00R.
Jardin, Hans, to Webasto-Werk W. Baier GmbH & Co. Operating mechanism for a tiltable sliding cover. 4,436,338, Cl. 296-223.000.
Jardin, Stephen C.; Yamada, Masaaki; Furth, Harold P.; and Okabayashi, Mitcheo, to United States of America, Energy. Method and apparatus for the formation of a spheromak plasma. 4,436,691, Cl. 376-137.000.
Jean, Mary: *See*—
Castleman, Bonnie L.; and Jean, Mary, 4,436,304, Cl. 273-29.00A.
Jefferys, Henry J. Shield for eaves drain gutter. 4,435,925, Cl. 52-12.000.
JENAer Glaswerk Schott & Gen.: *See*—
Schnabel, Roland, 4,436,626, Cl. 210-652.000.
Jennerjohn, Dennis A.; and Jensen, Lyle B., to FMC Corporation. Elevating and tilting mechanism for crane cab. 4,436,169, Cl. 180-89.140.
Jennings, Richard E., to Sperry Corporation. Mechanism for pivoting windrow shields into a vertical transport position. 4,435,948, Cl. 56-228.000.
Jensen, Lyle B.: *See*—
Jennerjohn, Dennis A.; and Jensen, Lyle B., 4,436,169, Cl. 180-89.140.
Jensen, Niels D.; Komossa, Horst; and Nielsen, Kurt F., to Grundfos A/S. Circulating pump unit. 4,436,486, Cl. 417-45.000.
Jeong, Tae S. Device for gathering the pollen from a bee. 4,435,867, Cl. 6-4.00R.
Jeromin, Lothar S.: *See*—
Ceelen, Theodorus M.; Jeromin, Lothar S.; and Wright, Lamont R., 4,436,054, Cl. 118-652.000.
JGC Corporation: *See*—
Yamaguchi, Katsunobu; Matsuoka, Seiichi; Hayashida, Takayuki; and Hayase, Tomio, 4,436,532, Cl. 48-209.000.
Jinnai, Koichiro: *See*—
Ebi, Yutaka; Fukazawa, Takao; Kawakubo, Toshio; Jinnai, Koichiro; Horike, Masanori; Iwasaki, Kyuhachiro; Ishikawa, Chuji; and Hirata, Toshitaka, 4,437,101, Cl. 346-75.000.
Jobe, William T., to Senco Products, Inc. Front gate and latch assembly for the guide body of an industrial fastener driving tool. 4,436,236, Cl. 227-123.000.
Johnson, Arthur L., Jr.; and Dodge, Marlow W., to Johnson Enterprises, Inc. Pump and tap assembly for beverage containers. 4,436,227, Cl. 222-382.000.
Johnson Enterprises, Inc.: *See*—
Johnson, Arthur L., Jr.; and Dodge, Marlow W., 4,436,227, Cl. 222-382.000.
Johnson, Harold W.: *See*—
Carlston, Jack E.; and Johnson, Harold W., 4,436,084, Cl. 126-429.000.
Johnson Matthey Inc.: *See*—
Dietz, Raymond L.; Featherby, Michael; and Margetts, Peter K., 4,436,785, Cl. 428-427.000.
Johnson, Orville O. Cleaner for a tubular wick. 4,435,871, Cl. 15-104.00R.
Johnson, Richard S.; and Potter, John K., to Lever Brothers Company. Adjuncts for use in the manufacture of detergent powders. 4,436,644, Cl. 252-174.130.
Jolin, Bart. Housing and related mounting system for stereo systems on motorcycles. 4,436,350, Cl. 312-7.100.
Jones, Bernard B. Injection-molded gaming token and process therefor. 4,435,911, Cl. 40-27.500.
Jones, Bernard R.: *See*—
Cottrell, Jennie L.; Davis, Richard A.; Harris, Susan K.; Jones, Bernard R.; and Payseur, John Y., 4,436,963, Cl. 179-18.00B.
Davis, Richard A.; Harris, Susan K.; and Jones, Bernard R., 4,436,962, Cl. 179-18.00B.
Jones, Cecil R. Controlled motion apparatus. 4,436,188, Cl. 188-378.000.
Jones, Frank W. Slicing device for rounded food articles. 4,436,011, Cl. 83-425.300.
Jones, Frank W. Sectioning device for rounded food articles. 4,436,025, Cl. 99-538.000.
Jones, Lawrence J. Smoke detection and disconnection apparatus. 4,437,014, Cl. 250-574.000.
Jones, Stephen H., to Nordson Corporation. Control arrangement for multifunction industrial machine. 4,437,152, Cl. 364-138.000.
Jonsson, Per-Erik; and Svedberg, Per, to ASEA Aktiebolag. Self-igniting thyristor with a plurality of discrete, field controlled zener diodes. 4,437,107, Cl. 357-38.000.
Joormann, Hendrik J. M.; Verweij, Hendrik; and Haisma, Jan, to U.S. Philips Corporation. Precision pressed glass object. 4,436,381, Cl. 350-432.000.
Jordan, William J.: *See*—
Hodgins, Martin G.; and Jordan, William J., 4,436,365, Cl. 350-96.160.
Josien, Daniel; and Migliarese, Jean-Louis, to Compagnie Francaise des Petroles. Inflatable internal pipe obturator with hardenable core. 4,436,120, Cl. 138-93.000.
Joule' Technical Corporation: *See*—
Belloli, Archille, 4,436,479, Cl. 414-757.000.
Joy Research Incorporated: *See*—
Reyner, Ellis M., 4,436,203, Cl. 206-524.800.
Jozic, Ljerka, to Wuelfing, Johann A. Heterosulfonamides. 4,436,908, Cl. 546-206.000.
Julius Blum Ges. m.b.H.: *See*—
Rock, Erich; and Brunner, Josef, 4,436,357, Cl. 312-338.000.
Jung, Johann: *See*—
Zeeh, Bernd; Goetz, Norbert; Ammermann, Eberhard; and Jung, Johann, 4,436,548, Cl. 71-76.000.
Just, Melitta: *See*—
Schonafinger, Karl; Beyerle, Rudi; Bohn, Helmut; Just, Melitta; Martorana, Piero A.; and Nitz, Rolf-Eberhard, 4,436,743, Cl. 424-269.000.
Juvinall, John W., to Owens-Illinois, Inc. Method and apparatus for comparing data signals in a container inspection device. 4,437,116, Cl. 358-106.000.
Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See*—
Roderburg, Harald, 4,435,968, Cl. 72-77.000.
Kabushiki Kaisha Akashi Seisakusho: *See*—
Yamazaki, Shigetomo, 4,437,009, Cl. 250-396.0ML.
Kabushiki Kaisha Cubic Engineering: *See*—
Nakanishi, Motoyasu, 4,436,571, Cl. 156-384.000.
Kabushiki Kaisha Kobe Seiko Sho: *See*—
Tanaka, Osamu; Takeba, Kazuhiro; Saita, Hiroshi; Matsushita, Yukinobu; and Koyabu, Koji, 4,436,563, Cl. 148-26.000.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Akagi, Jiro, 4,436,247, Cl. 239-533.700.
Baba, Kiyokazu; and Nishida, Kenji, 4,436,199, Cl. 198-750.000.
Kabushiki Kaisha Medos Kenkyusho: *See*—
Ouchi, Teruo, 4,436,087, Cl. 128-6.000.
Kabushiki Kaisha Sato: *See*—
Sato, Yo; and Kashiwaba, Tadao, 4,436,573, Cl. 156-384.000.
Kabushiki Kaisha Suwa Seikosha: *See*—
Kitano, Masuo, 4,436,436, Cl. 368-204.000.
Koto, Haruhiko, 4,436,439, Cl. 400-126.000.
Ushikoshi, Kenichi, 4,436,435, Cl. 368-71.000.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Fujita, Hironori; Arai, Tohru; and Mizuno, Jiro, 4,436,560, Cl. 148-6.000.
Matsui, Kenji; and Teraoka, Fuminori, 4,436,255, Cl. 242-107.40A.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Seiki, Kazuo; Motobayashi, Kozo; Yoshizawa, Toshio; Yoshida, Yoshiaki; and Onoue, Keiji, 4,435,954, Cl. 57-408.000.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Fujita, Hironori; and Arai, Tohru, 4,436,559, Cl. 148-6.000.
Fujita, Hironori; Arai, Tohru; and Mizuno, Jiro, 4,436,560, Cl. 148-6.000.
Kabushiki Kaisha Veno Seiyaku Oyokenkyuso: *See*—
Ueno, Ryuzo; Sakota, Kazuyuki; Kawata, Keiji; and Naito, Yoshiyuki, 4,436,670, Cl. 260-465.00B.
Kadelka, Friedrich, to Chemische Fabrik Grunau GmbH. Process for consolidating soil and frost protection layers produced thereby. 4,436,556, Cl. 106-90.000.
Kaderjak, Gyula; Veres, Albert; Barkoczy, Istvan; and Lonscsak, Janos. Steel-cored aluminum cable. 4,436,954, Cl. 174-128.00R.
Kadnikova, Galina I.: *See*—
Pakhomov, Gennady N.; Luste, Anita Y.; Kadnikova, Galina I.; and Kolesnik, Anatoly G., 4,436,720, Cl. 424-44.000.
Kaiser, Fritz: *See*—
Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Neubert, Peter, 4,436,735, Cl. 424-182.000.

Kaiser, John J.: *See*—
Buck, Daniel M.; Sibley, Alan T.; and Kaiser, John J., 4,436,696, Cl. 419-57.000.

Kaiyo Kogyo Co., Ltd.: *See*—
Hisao, Makino; and Sadao, Kozima, 4,436,675, Cl. 261-77.000.

Kakita, Kazutoshi: *See*—
Tsuyama, Yoshito; Shimazaki, Yasumi; Kakita, Kazutoshi; and Hirokawa, Toshio, 4,436,239, Cl. 228-17.000.

Kalocai, Andrew J.: *See*—
Allen, Roland M.; and Kalocai, Andrew J., 4,436,478, Cl. 414-752.000.

Kalopissis, Gregoire; and Vanlerberghe, Guy, to L'Oreal. Cationic surface-active agents. 4,436,909, Cl. 546-248.000.

Kamei, Shigeki: *See*—
Imamura, Yoshinobu; Kamei, Shigeki; Yamagata, Tetuo; and Fujii, Hiroshi, 4,436,026, Cl. 100-45.000.

Kamei, Shun: *See*—
Okumura, Fumio; Higuchi, Masahiro; Kamei, Shun; and Miyauchi, Masahiro, 4,436,783, Cl. 428-411.000.

Kamiyama, Mituo; and Namazue, Hirotoshi, to Kokusan Kinzoku Kogyo Kabushiki Kaisha. Apparatus control system. 4,437,153, Cl. 364-140.000.

Kamiyama, Shin-ichi; and Hasegawa, Yutaka, to Ricoh Company, Ltd. Toner collection device. 4,436,414, Cl. 355-15.000.

Kampe, Wolfgang: *See*—
Fauland, Erich; Kampe, Wolfgang; Stach, Kurt; and Bartsch, Wolfgang, 4,436,742, Cl. 424-269.000.

Kamyr, Inc.: *See*—
Elmore, Carl L., 4,436,586, Cl. 162-19.000.

Kandler, Erich, to Siemens Aktiengesellschaft. Polarization converter for electromagnetic waves. 4,437,099, Cl. 343-756.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Ushioda, Minoru; Ueno, Kenji; Furukawa, Hiroyasu; and Kobayashi, Masahiro, 4,436,861, Cl. 524-425.000.

Kaneko, Yoshimasa: *See*—
Ozaki, Nobuo; and Kaneko, Yoshimasa, 4,436,468, Cl. 411-248.000.

Kansai Paint Company, Limited: *See*—
Aihara, Tetsuo; Nakayama, Yasuharu; Umeyama, Koichi; Sawada, Kozo; and Shinohara, Masaaki, 4,436,849, Cl. 523-501.000.

Kanto Ishi Pharmaceutical Co., Ltd.: *See*—
Shimizu, Shigeo; Takano, Hiroyuki; Yoshimura, Shoji; and Takada, Kinji, 4,436,904, Cl. 544-27.000.

Kao Soap Co., Ltd.: *See*—
Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, 4,436,722, Cl. 424-70.000.
Yamamura, Masaaki; Igarashi, Taizo; and Ukigai, Toshiyuki, 4,436,527, Cl. 44-51.000.

Kapolyi, Laszlo, to Tatabanyai Szenbanyak. Process for recovery of aluminum from carbonaceous waste products. 4,436,550, Cl. 75-10.00R.

Karasawa, Hideyuki: *See*—
Hayashi, Yutaka; Yamanaka, Mitsuyuki; and Karasawa, Hideyuki, 4,436,761, Cl. 427-38.000.

Karis, Arthur T.: *See*—
Frye, Kenneth G.; Fitzpatrick, Donald C.; and Karis, Arthur T., 4,436,302, Cl. 271-202.000.

Karpiloff, Kenneth M., to Duracell Inc. Method for making decorated battery casings. 4,436,777, Cl. 428-36.000.

Karr, Michael A., Jr. Fluid seal. 4,436,316, Cl. 277-124.000.

Karwat, Heinz, to Linde Aktiengesellschaft. Method for the removal of acidic gases such as carbon dioxide from gaseous mixtures. 4,436,707, Cl. 423-226.000.

Kashiwaba, Tadao: *See*—
Sato, Yo; and Kashiwaba, Tadao, 4,436,573, Cl. 156-384.000.

Kashiwagi, Hidehiro, to Taiyo Denko Kabushiki Kaisha. Method of treatment for recycling a waste film as a raw material and apparatus therefor. 4,436,104, Cl. 134-63.000.

Kashiwagi, Hiromi: *See*—
Yamashita, Keitaro; and Kashiwagi, Hiromi, 4,436,055, Cl. 118-658.000.

Kashiwagi, Kazuo, to Canon Kabushiki Kaisha. Apparatus for projecting any selected image in a recording medium having images recorded thereon in at least two lines. 4,436,391, Cl. 353-26.00R.

Kasper, Alan H.; and Mathe, Istvan, to Allied Corporation. Electrical connector termination system for quick field service. 4,436,359, Cl. 339-61.00M.

Kasten, Harold B. Neck ring mold apparatus for glass bottle manufacture. 4,436,543, Cl. 65-172.000.

Kasuga, Takuzo; Takahashi, Katsuhiko; and Nakashima, Tuneyasu, to Polyplastics Co., Ltd. Thermoplastic polyester composition. 4,436,877, Cl. 525-437.000.

Kato, Hiroshi: *See*—
Ohyama, Sadahiro; Kato, Hiroshi; Yaguchi, Sadao; Baba, Mikito; and Okada, Morikazu, 4,437,140, Cl. 361-402.000.

Kato, Kichiro: *See*—
Akagi, Motonobu; Nomura, Isshi; Hattori, Kyo; and Kato, Kichiro, 4,436,070, Cl. 123-440.000.

Kato, Takazo: *See*—
Matsuda, Fujio; Kato, Takazo; Honda, Tadatoshi; Terada, Kazuhiro; and Kogure, Yasuo, 4,436,916, Cl. 548-508.000.
Matsuda, Fujio; and Kato, Takazo, 4,436,917, Cl. 548-508.000.

Kato, Yasuo: *See*—
Matsuda, Tadahito; Okumura, Masahide; Yokouchi, Hisatake; Ozasa, Susumu; and Kato, Yasuo, 4,437,008, Cl. 250-396.00R.

Kato, Yoshiaki, to Nissan Motor Company, Limited. Residual liquid meter using computer responsive to measurements of liquid level and flow. 4,437,162, Cl. 364-442.000.

Katoh, Mitsuo: *See*—
Imamura, Tatsuo; and Katoh, Mitsuo, 4,436,600, Cl. 204-140.000.

Kaufman, Joseph, to Becton Dickinson Company. Needle assembly with vein entry indicator. 4,436,098, Cl. 128-766.000.

Kaufman, Marvin L., to Mobil Oil Corporation. Aromatic urea-based curing agent system for epoxy resin coating compositions. 4,436,890, Cl. 528-93.000.

Kawakubo, Toshio: *See*—
Ebi, Yutaka; Fukazawa, Takao; Kawakubo, Toshio; Jinnai, Koichiro; Horike, Masanori; Iwasaki, Kyuhachiro; Ishikawa, Chuji; and Hirata, Toshitaka, 4,437,101, Cl. 346-75.000.

Kawasaki Steel Corporation: *See*—
Sakamoto, Noboru; Yamashita, Itaru; Wada, Satoshi; Yano, Kenichi; and Oda, Suehiro, 4,436,981, Cl. 219-124.320.
Sakuraya, Toshikazu; Nakamura, Hideo; Harada, Nobuo; Fujii, Tetsuya; and Emi, Toshihiko, 4,436,287, Cl. 266-47.000.
Tokuhisa, Masaaki; and Hirai, Yukio, 4,436,562, Cl. 148-24.000.

Kawashima, Katsumi: *See*—
Bando, Yoshihide; Tanaka, Toshiki; Honda, Sueaki; Takahashi, Yoshihiko; Tsuruyoshi, Kenichi; Kawashima, Katsumi; and Kishimoto, Syuichi, 4,437,078, Cl. 335-81.000.

Kawata, Keiji: *See*—
Ueno, Ryuzo; Sakota, Kazuyuki; Kawata, Keiji; and Naito, Yoshiyuki, 4,436,670, Cl. 260-465.00B.

Kawata, Tadashi: *See*—
Akao, Mutsuo; and Kawata, Tadashi, 4,436,809, Cl. 430-501.000.

Kazama, Hidemichi: *See*—
Emura, Koji; Suzuki, Tuneo; and Kazama, Hidemichi, 4,436,685, Cl. 264-148.000.

KBL Corporation: *See*—
Zane, Peter L.; and Zane, Michael S., 4,436,232, Cl. 224-39.000.

Keck, Donald B., to Corning Glass Works. Multiple core optical waveguide for secure transmission. 4,436,368, Cl. 350-96.330.

Kellar, Paul R. N.: *See*—
Taylor, Richard J.; Kellar, Paul R. N.; and Hinson, Neil R., 4,437,121, Cl. 358-160.000.

Keller, Arnold, to Waldemar Link GmbH & Co. Hip joint prosthesis with a shaft to be fitted into the medullary canal of the femur. 4,435,854, Cl. 3-1.913.

Keller, Wolfgang; and Schrotter, Gerhard, to Siemens Aktiengesellschaft. Method of setting a stable melting zone in a semiconductor crystalline rod during crucible-free zone melting thereof. 4,436,578, Cl. 156-620.000.

Kellogg, James D.; and Mingesz, August C., to C-R-O, Inc. Metal machining device with control circuit isolation. 4,436,288, Cl. 266-69.000.

Kelly, Eugene L. Auxiliary feed hopper for permitting the trimming, in a saddle binder of perfect bound books. 4,436,469, Cl. 412-16.000.

Kelly, James C.; and Shurden, Charles H., to Starkville Tool & Die Company. Method and machine for pre-forming and turning gloves. 4,436,231, Cl. 223-40.000.

Kelly, William R.; and Alvero, Ernesto J., to RCA Corporation. System and method for controlling the exposure of color picture tube phosphor screens. 4,436,394, Cl. 354-1.000.

Kennedy, George W., to Senco Southeast, Inc. Frame fastener. 4,436,234, Cl. 227-4.000.

Kennington, Kerry S.; and Baker, Ronald, to Hughes Tool Company. Reversal mechanism for power tong. 4,436,002, Cl. 81-57.200.

Kenworthy, Samuel P., to Basic Machinery Co., Inc. Apparatus for making special brick shapes. 4,436,501, Cl. 425-308.000.

Kern, Werner, to RCA Corporation. Structural defect detection. 4,436,999, Cl. 250-302.000.

Keystone Consolidated Industries, Inc.: *See*—
Craig, Clark E., 4,435,966, Cl. 70-161.000.

KG Maschinenfabrik: *See*—
Donner, Siegmar; Strempler, Gunter; and Schmid, Manfred, 4,436,298, Cl. 271-10.000.

Khanna, Sarwan K.; and Khanna, Satya P., to Bell Telephone Laboratories, Incorporated. Electrically conducting thermoplastic material, its manufacture, and resulting article. 4,436,648, Cl. 252-511.000.

Khanna, Satya P.: *See*—
Khanna, Sarwan K.; and Khanna, Satya P., 4,436,648, Cl. 252-511.000.

Khurgin, Boris: *See*—
Rosinek, Shlomo; Rinkewich, Isaac; and Khurgin, Boris, 4,437,098, Cl. 340-870.020.

Kiba, Yasuo: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,436,921, Cl. 544-238.000.

Kidde, Inc.: *See*—
Revay, Blaise, 4,436,159, Cl. 169-28.000.
Thomas, William D., 4,436,456, Cl. 406-19.000.

Kienzle, Wolfgang: *See*—
Hafner, Udo; Herth, Harro; Kienzle, Wolfgang; Knapp, Heinrich; Krauss, Rudolf; Lembke, Manfred; Paschke, Werner; and Sauer, Rudolf, 4,436,071, Cl. 123-472.000.

Kihara, Keiichi: *See*—
Isowa, Yoshikazu; Ohmori, Muncki; Mori, Kaoru; Ichikawa, Tetsuya; Nonaka, Yuji; Kihara, Keiichi; Oyama, Kiyotaka; Satoh, Heijiro; and Nishimura, Shigeaki, 4,436,925, Cl. 560-19.000.

Kikuchi, Ko: *See*—
Makimoto, Mitsuo; Endo, Haruyoshi; Kikuchi, Ko; and Yamashita, Sadahiko, 4,437,076, Cl. 333-206.000.

Kilches, Helmut D.; Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, to Voest-Alpine Aktiengesellschaft. Plasma melting furnace arrangement. 4,436,290, Cl. 266-158.000.

Kim, Kwon S., to Star Manufacturing Co. Prefabricated panel construction system. 4,435,934, Cl. 52-309.700.

Kim, Syng N., to Wico Corporation. Snap-in switch mounting structure. 4,436,971, Cl. 200-295.000.

Kimberly-Clark Corporation: *See*—
Hotchkiss, Harry W.; Notheis, Patrick J.; and Englebert, Stephen M., 4,436,780, Cl. 428-198.000.
Pomplun, William S.; and Grube, Herbert E., 4,436,867, Cl. 524-503.000.

Kindt, Robert J., to Eastman Kodak Company. Apparatus and method for registering related transferable images in accurate superposition on a receiver member. 4,436,405, Cl. 355-3.0TR.

King, Colin V.: *See*—
Balbis, Manuel G.; and King, Colin V., 4,436,127, Cl. 152-209.00R.

King, Frank J.: *See*—
Adrian, David L.; and Young, Sam H., 4,435,912, Cl. 40-365.000.

King, Frank R.; and Engler, Donald J., to Simmons Universal Corporation. Control arrangement and method for an adjustable bed. 4,435,862, Cl. 5-66.000.

King Instrument Corporation: *See*—
Deyesso, Joseph P.; Sarser, David; and Berube, Richard G., 4,436,251, Cl. 242-56.00R.

King, Kevin J.: *See*—
Houck, Robert J.; and King, Kevin J., 4,436,198, Cl. 198-502.000.

Kinoshita, Dainichiro, to Horiba, Ltd. Indicating means for measuring instrument. 4,437,058, Cl. 324-120.000.

Kinoshita, Keijiro, to Nissan Motor Co., Ltd. Roller type planetary gear having a preloading arrangement. 4,435,998, Cl. 74-798.000.

Kinoshita, Toyohiro: *See*—
Tamama, Hiroshi; Ozawa, Yukio; Miyazaki, Jingo; Ito, Hiroshi; and Kinoshita, Toyohiro, 4,436,313, Cl. 277-80.000.

Kirkman, David H., to International Business Machines Corporation. Passive display module and system. 4,436,378, Cl. 350-345.000.

Kirsch, Paul A., to Budd Company, The. Solar reflector panel. 4,436,373, Cl. 350-296.000.

Kirschbaum, Robert: *See*—
Smith, Paul; Lemstra, Pieter J.; Kirschbaum, Robert; and Pijpers, Jacques P. L., 4,436,689, Cl. 264-204.000.

Kirst, Herbert A., to Eli Lilly and Company. 4"- And 3-ester derivatives of DMT and DMOT. 4,436,733, Cl. 424-180.000.

Kishi, Akira: *See*—
Umezu, Hiroaki; Kishi, Akira; and Yamagami, Hiroshi, 4,435,927, Cl. 52-79.130.

Kishima, Yukihiro, to Victor Company of Japan, Ltd. Automatic record playing apparatus having a tone arm position detecting device. 4,437,181, Cl. 369-244.000.

Kishimoto, Sumiko: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohzchi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,436,921, Cl. 544-238.000.

Kishimoto, Syuichi: *See*—
Bando, Yoshihide; Tanaka, Toshiki; Honda, Sueaki; Takahashi, Yoshihiko; Tsuruyoshi, Kenichi; Kawashima, Katsumi; and Kishimoto, Syuichi, 4,437,078, Cl. 335-81.000.

Kiss, Jozsef: *See*—
Ferenczi, Gyorgy; Horvath, Peter; Toth, Ferenc; Kiss, Jozsef; and Boda, Janos, 4,437,060, Cl. 324-158.00D.

Kita, Yuichi; Sakamoto, Kentaro; and Sato, Takahisa, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Method for manufacture of high-purity phthalic anhydride. 4,436,922, Cl. 549-251.000.

Kitano, Masao, to Toa Paint Co., Ltd. Traffic marking paint. 4,436,845, Cl. 523-172.000.

Kitano, Masuo, to Shimauchi Seiki Kabushiki Kaisha; and Kabushiki Kaisha Suwa Seikosha. Detection circuit for an electronic timepiece. 4,436,436, Cl. 368-204.000.

Kitazawa, Yuzuru: *See*—
Furuoya, Itsuo; and Kitazawa, Yuzuru, 4,436,671, Cl. 260-465.300.

Kitrell, John V., to Radio Engineering Service, Inc. Apparatus for mounting electronics equipment. 4,436,351, Cl. 312-223.000.

Klauke, Erich: *See*—
Marhold, Albrecht; and Klauke, Erich, 4,436,941, Cl. 570-144.000.

Kleemann, Axel; Lehmann, Bernd; and Martens, Jurgen, to Degussa Aktiengesellschaft. Process for the production of aqueous solutions of sodium salts of α-amino carboxylic acids. 4,436,910, Cl. 546-245.000.

Klees, Garry W., to Boeing Company, The. Turbine bypass turbofan with mid-turbine reingestion and method of operating the same. 4,435,958, Cl. 60-204.000.

Klein, Paul E., to Modcom, Inc. Orthodontic chain application tool. 4,436,510, Cl. 433-4.000.

Klein, Schanzlin & Becker Aktiengesellschaft: *See*—
Gaffal, Karl; and Klepp, Christian, 4,436,950, Cl. 174-11.0BH.

Kleinberg, Leonard L., to United States of America, National Aeronautics and Space Administration. Low noise tuned amplifier. 4,437,069, Cl. 330-109.000.

Kleindienst GmbH & Co.: *See*—
Donner, Siegmar; Strempler, Gunter; and Schmid, Manfred, 4,436,298, Cl. 271-10.000.

Kleiner, Matvei: *See*—
Ron, Moshe; Kleiner, Matvei; and Navon, Uri, 4,436,539, Cl. 62-4.000.

Kleinert, Karl W.; and Kleinert, Kenneth B. Storage drawer with retained partitions. 4,436,215, Cl. 220-22.300.

Kleinert, Kenneth B.: *See*—
Kleinert, Karl W.; and Kleinert, Kenneth B., 4,436,215, Cl. 220-22.300.

Klepp, Christian: *See*—
Gaffal, Karl; and Klepp, Christian, 4,436,950, Cl. 174-11.0BH.

Kliklok Corporation: *See*—
Hoyrup, Sigurd J., 4,435,943, Cl. 53-491.000.

Klink, Jerome P.: *See*—
Jackson, Robert R.; and Klink, Jerome P., 4,436,258, Cl. 242-18.00G.

Klosiewicz, Daniel W., to Hercules Incorporated. Plasticized polydicyclopentadiene and a method for making the same. 4,436,858, Cl. 524-296.000.

Kluge, Arthur F.; Strosberg, Arthur M.; Whiting, Roger L.; and Christie, George A. Benzodioxane-imidazoline compounds as antihypertensives. 4,436,914, Cl. 548-348.000.

Klukis, Edward L. Automatic corn sorting and inspection system. 4,436,207, Cl. 209-577.000.

Klupfel, Norbert: *See*—
Horling, Peter; Hetterich, Hermann; Dobhan, Herbert; and Klupfel, Norbert, 4,435,889, Cl. 29-148.40C.

KMS Fusion, Inc.: *See*—
Schaap, A. Paul; Busch, George E.; and Nolen, Robert L., Jr., 4,436,715, Cl. 423-579.000.

Knapp, Heinrich: *See*—
Hafner, Udo; Herth, Harro; Kienzle, Wolfgang; Knapp, Heinrich; Krauss, Rudolf; Lembke, Manfred; Paschke, Werner; and Sauer, Rudolf, 4,436,071, Cl. 123-472.000.

Knickerbocker, Robert H., to Siemon Company, The. Electrical connectors and terminal connecting block. 4,436,360, Cl. 339-97.00P.

Knight, Donald P.: *See*—
Farmer, Felta C., Jr.; and Knight, Donald P., 4,437,120, Cl. 358-139.000.

Knirsch, Franco, to Ing. C. Olivetti & C., S.p.A. Electrophotographic recording element having an aniline sulphonephthelein charge generator. 4,436,801, Cl. 430-73.000.

Knitter, Kathy A.: *See*—
Schick, Martin J.; and Knitter, Kathy A., 4,436,528, Cl. 44-51.000.

Knoll International, Inc.: *See*—
Unger, Gotz W., 4,435,882, Cl. 24-265.00R.

Knopfel, Hans-Peter: *See*—
Muller, Hans; Knopfel, Hans-Peter; Muller, Felix; and Kretz, Rolf H., 4,436,814, Cl. 435-162.000.

Knopp, Walter V., to Revere Copper and Brass, Inc. Roll compacting of polymer powders into fully dense products. 4,436,682, Cl. 264-70.000.

Knowles, Terrance: *See*—
Feinberg, Jay H.; and Knowles, Terrance, 4,436,240, Cl. 228-122.000.

Kobayashi, Kunimitsu: *See*—
Ishibai, Isao; and Kobayashi, Kunimitsu, 4,436,386, Cl. 350-550.000.

Kobayashi, Masahiro: *See*—
Ushioda, Minoru; Ueno, Kenji; Furukawa, Hiroyasu; and Kobayashi, Masahiro, 4,436,861, Cl. 524-425.000.

Kobayashi, Takeo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Photographic information display systems for use in photographic cameras. 4,436,397, Cl. 354-465.000.

Kobe, Inc.: *See*—
Peterson, Daniel G.; and Erickson, John W., 4,436,492, Cl. 417-386.000.

Koch, Carl; and Gfeller, Karl. Apparatus for transporting or positioning of a strip-shaped light-sensitive material with reference to a picture window. 4,436,399, Cl. 354-159.000.

Koch, Walter: *See*—
Senn, Georg; and Koch, Walter, 4,436,123, Cl. 139-452.000.

Koci, Zdenek: *See*—
Hugelshofer, Paul; Zbinden, Peter; and Koci, Zdenek, 4,436,523, Cl. 8-527.000.

Kocmanek, Karl H.; and Shambelan, Robert C., to RCA Corporation. Controlled environment for diffusion furnace. 4,436,309, Cl. 432-253.000.

Koehler, Charles F. Method and apparatus for stacking for bars and the like. 4,436,471, Cl. 414-36.000.

Kogure, Yasuo: *See*—
Matsuda, Fujio; Kato, Takazo; Honda, Tadatoshi; Terada, Kazuhiro; and Kogure, Yasuo, 4,436,916, Cl. 548-508.000.

Kohn, Harold: *See*—
Ergler, James M.; Kohn, Harold; and Smetana, Michael, 4,436,001, Cl. 81-9.510.

Kohno, Hideki: *See*—
Yamamoto, Etsuji; Sekihara, Kensuke; and Kohno, Hideki, 4,437,136, Cl. 361-146.000.

Kohsaka, Masanobu: *See*—
Umehara, Kazuyoshi; Tanaka, Hirokazu; Uchida, Itsuo; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,436,726, Cl. 424-177.000.

Koizumi, Nobuyuki: *See*—
Yamaguchi, Yutaka; Koizumi, Nobuyuki; Araki, Tamio; Kojima, Koichi; and Ikeda, Nobumasa, 4,436,131, Cl. 152-361.0FP.

Kojima, Ichiro: *See*—
Maruhashi, Kenji; Kojima, Ichiro; Oguchi, Yutaka; Endoh, Noboru; and Satoh, Tetsuo, 4,436,663, Cl. 260-245.910.

Kojima, Koichi: *See*—
Yamaguchi, Yutaka; Koizumi, Nobuyuki; Araki, Tamio; Kojima, Koichi; and Ikeda, Nobumasa. 4,436,131, Cl. 152-361.0FP.

Kojima, Tatsuo: *See*—
Nakamura, Hiromichi; Urano, Haruya; Kojima, Tatsuo; and Sekiwa, Mitsunao. 4,436,006, Cl. 83-13.000.

Kokado, Masayuki: *See*—
Sumi, Hideji; and Kokado, Masayuki. 4,437,021, Cl. 307-270.000.

Kokubo, Eiichi; and Osako, Kyoichi, to Laurel Bank Machine Co., Ltd. Coin discharge machine and partitioned carton. 4,436,102, Cl. 133-2.000.

Kokura, Satoshi; Nihei, Masayasu; Wachi, Hiroshi; Mashida, Hiromi; and Senda, Kousaku, to Hitachi, Ltd. Two electrode welding with different currents supplied to the electrodes. 4,436,982, Cl. 219-130.510.

Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
Matsumoto, Shuichi; Hatori, Yoshinori; Murakami, Hitomi; and Yamamoto, Hideo. 4,437,119, Cl. 358-136.000.

Kokusan Kinzoku Kogyo Kabushiki Kaisha: *See*—
Kamiyama, Mituo; and Namazue, Hirotoshi. 4,437,153, Cl. 364-140.000.

Koleff, Kolio. V/STOL Aircraft. 4,436,261, Cl. 244-51.000.

Kolesnik, Anatoly G.: *See*—
Pakhomov, Gennady N.; Luste, Anita Y.; Kadnikova, Galina I.; and Kolesnik, Anatoly G., 4,436,720, Cl. 424-44.000.

Komiya, Yutaka, to Canon Kabushiki Kaisha. Image forming apparatus. 4,436,410, Cl. 355-14.00E.

Kommm, Rolf. Apparatus for monitoring exhaust gases. 4,436,504, Cl. 431-15.000.

Komossa, Horst: *See*—
Jensen, Niels D.; Komossa, Horst; and Nielsen, Kurt F., 4,436,486, Cl. 417-45.000.

Kondo, Toshio, to Nippon Chuzo Kabushiki Kaisha. Method of and apparatus for reclaiming molding sand. 4,436,138, Cl. 164-5.000.

Kondo, Yoshikazu: *See*—
Yamamoto, Tsuyoshi; Taniguchi, Norihisa; Iida, Kazuyoshi; and Kondo, Yoshikazu, 4,436,179, Cl. 181-210.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Harada, Yoshiaki, 4,437,001, Cl. 250-324.000.
Seimiya, Ryubun; Iwai, Fumio; and Nosaka, Isao, 4,436,402, Cl. 355-3.00R.

Kononov, Valery I.: *See*—
Petrov, Lev N.; Adoniev, Viktor A.; and Kononov, Valery I., 4,436,619, Cl. 209-573.000.

Konwitza, Vladimir: *See*—
Wittmann, Heinz; and Konwitza, Vladimir, 4,436,322, Cl. 280-614.000.

Koper, James G.: *See*—
Kumar, Shri A.; Ljung, Bo H. G.; and Koper, James G., 4,436,423, Cl. 356-350.000.

Korzendorfer, Joseph E.: *See*—
Mayo, Henry C.; and Korzendorfer, Joseph E., 4,436,330, Cl. 292-263.000.

Koschinek, Gunter; Wandel, Dietmar; Kretschmann, Bernd; and Zinsser, Rolf, to Davy McKee Aktiengesellschaft. Process for melt-spinning of synthetic polymers. 4,436,688, Cl. 264-176.00F.

Kosicki, Bernard B.: *See*—
Bernacki, Stephen E.; and Kosicki, Bernard B., 4,436,584, Cl. 156-643.000.

Koslow, Evan E.; and Edelman, Robert R., to Koslow Technologies Corporation. Large arrays of discrete ionizing radiation detectors multiplexed using fluorescent optical converters. 4,437,007, Cl. 250-366.000.

Koslow Technologies Corporation: *See*—
Koslow, Evan E.; and Edelman, Robert R., 4,437,007, Cl. 250-366.000.

Kosuzume, Hiroshi: *See*—
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, 4,436,724, Cl. 424-101.000.

Koto, Haruhiko, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Small printer. 4,436,439, Cl. 400-126.000.

Kotter, Wolfgang, to Robert Bosch GmbH. Hydraulic valve mechanism. 4,436,114, Cl. 137-596.000.

Koya, Masahiko; and Fukuoka, Yohei, to Asahi Kasei Kogyo Kabushiki Kaisha. Method of hydro-dealkylation. 4,436,945, Cl. 585-488.000.

Koyabu, Koji: *See*—
Tanaka, Osamu; Takeba, Kazuhiro; Saita, Hiroshi; Matsushita, Yukinobu; and Koyabu, Koji, 4,436,563, Cl. 148-26.000.

Koyama, Shigeo: *See*—
Yamagata, Ryutaro; Kozuka, Nobuhiko; Nishihama, Hitoshi; Koyama, Shigeo; and Sakai, Kazutada, 4,436,412, Cl. 355-15.000.

Kozaki, Syuichi: *See*—
Funada, Fumiaki; Kozaki, Syuichi; Matsuura, Masataka; and Wada, Tomio, 4,436,379, Cl. 350-347.00E.

Kozuka, Nobuhiko: *See*—
Yamagata, Ryutaro; Kozuka, Nobuhiko; Nishihama, Hitoshi; Koyama, Shigeo; and Sakai, Kazutada, 4,436,412, Cl. 355-15.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Gebke, Klaus; Huhn, Friedrich; and Lekutat, Rolf, 4,436,676, Cl. 261-151.000.

Kramer, James H., to B. F. Goodrich Company, The. Vibration dampening support. 4,436,274, Cl. 248-633.000.

Krampe & Co. Fertigung in Bergbaubedarf GmbH: *See*—
Best, Gerd; and Weikert, Norbert B., 4,436,346, Cl. 299-87.000.

Krantz, Karl W., to General Electric Company. Composition and method for improving the properties of liquid media. 4,436,846, Cl. 523-175.000.

Krauss, Rudolf: *See*—
Hafner, Udo; Herth, Harro; Kienzle, Wolfgang; Knapp, Heinrich; Krauss, Rudolf; Lembke, Manfred; Paschke, Werner; and Sauer, Rudolf, 4,436,071, Cl. 123-472.000.

Krehl, Gunter: *See*—
Brudermann, Uwe; Kunze, Karl-H.; Krehl, Gunter; Linde, E. Volker; and Lorenz, Dieter R., 4,436,320, Cl. 280-242.0WC.

Krennrich, Otmar; Brendel, Gottfried; and Pietsch, Hartmut, to Metallgesellschaft Aktiengesellschaft. Method of recovering uranium oxide from alkaline sodium uranyl carbonate solutions. 4,436,704, Cl. 423-11.000.

Kretschmann, Bernd: *See*—
Koschinek, Gunter; Wandel, Dietmar; Kretschmann, Bernd; and Zinsser, Rolf, 4,436,688, Cl. 264-176.00F.

Kretz, Rolf H.: *See*—
Muller, Hans; Knopfel, Hans-Peter; Muller, Felix; and Kretz, Rolf H., 4,436,814, Cl. 435-162.000.

Kreuels, Klaus: *See*—
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, 4,436,680, Cl. 264-60.000.

Kreuzburg, Eberhard; Von Der Pahle, Dietrich J.; Monsheimer, Rolf; Pfleiderer, Ernst; and Taeger, Tilman, to Universal Gesellschaft fur Umwelttechnik mbH; and Rohm GmbH. CRT Method of converting and separating substances contained, dissolved or dissolvable in a carrier liquid. 4,436,624, Cl. 210-632.000.

Kriva, Kenneth J.: *See*—
Lange, Donald A.; Hanson, Marc C.; and Kriva, Kenneth J., 4,436,757, Cl. 426-438.000.

Krowl, Thomas R., to National Gypsum Company. Vinyl siding attachment. 4,435,933, Cl. 52-309.100.

Krowl, Thomas R.: *See*—
Rutkowski, Edward J.; and Krowl, Thomas R., 4,435,938, Cl. 52-521.000.

Krueger, Henry A. Forklift safety scope. 4,436,374, Cl. 350-302.000.

Kruger, Robert A., to Thomson-CSF Broadcast, Inc. Method and apparatus for imaging a body. 4,436,095, Cl. 128-654.000.

Krumkalns, Eriks V., to Eli Lilly and Company. Substituted 1-thia-3-aza-4-ones. 4,436,739, Cl. 424-246.000.

Krupp-Koppers GmbH: *See*—
Petrovic, Vladan; and Rotthaus, Heinz, 4,436,589, Cl. 201-41.000.

Kuan, Tiong H.; and Sommer, John G., to General Tire & Rubber Company, The. Coating rubber with a composition which resists removal by water. 4,436,857, Cl. 524-260.000.

Kubota, Ltd.: *See*—
Okuyama, Shigeaki; Nakamura, Norimi; and Hashimoto, Osami, 4,435,907, Cl. 33-366.000.

Kuchenbecker, Morris W., to James River/Dixie-Northern, Inc. Reclosable paperboard carton structure. 4,436,206, Cl. 206-625.000.

Kuchuk-Yatsenko, Sergei I.: *See*—
Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; Galian, Boris A.; Asoyants, Grigory B.; and Tishura, Vladimir I., 4,436,974, Cl. 219-66.000.

Kudo, Mituo: *See*—
Mochizuki, Taketoshi; Matsuo, Kazuya; Kudo, Mituo; Arai, Akira; Yamada, Junichi; Shono, Keizi; Aoki, Masaaki; Ohmori, Masaichi; and Nishi, Genichiro, 4,435,962, Cl. 62-175.000.

Kuerten, Heribert: *See*—
Schulz, Rudi; Puestel, Hubert; Weber, Georg; and Kuerten, Heribert, 4,436,702, Cl. 422-195.000.

Kuffner, Karl; Marx, Paul; and Lassig, Wolfgang, to Agfa-Gevaert Aktiengesellschaft. Color-photographic recording material containing non-diffusing electron donor precursor compounds. 4,436,810, Cl. 430-551.000.

Kukacka, Lawrence E.: *See*—
Sugama, Toshifumi; and Kukacka, Lawrence E., 4,436,555, Cl. 106-85.000.

Kukino, Yoshinori: *See*—
Miura, Mituo; Kukino, Yoshinori; and Fujii, Takumi, 4,436,453, Cl. 405-263.000.

Kumagai, Tadanobu: *See*—
Sawabe, Masaki; and Kumagai, Tadanobu, 4,436,310, Cl. 277-11.000.

Kumar, Shri A.; Ljung, Bo H. G.; and Koper, James G., to Singer Company, The. Ring later gyroscope suspension. 4,436,423, Cl. 356-350.000.

Kummer, David A.: *See*—
Dean, Mark E.; Eggebrecht, Lewis C.; Kummer, David A.; and Saenz, Jesus A., 4,437,092, Cl. 340-703.000.

Kunkel, Heinrich: *See*—
Olschewski, Armin; Brandenstein, Manfred; and Kunkel, Heinrich, 4,436,516, Cl. 464-128.000.

Kunze, Karl-H.: *See*—
Brudermann, Uwe; Kunze, Karl-H.; Krehl, Gunter; Linde, E. Volker; and Lorenz, Dieter R., 4,436,320, Cl. 280-242.0WC.

Kunzmann, Otto, to Bielomatik Leuze GmbH & Co. Sheet piling devices. 4,436,472, Cl. 414-50.000.

Kuo, Hong-Hsiang, to General Motors Corporation. Continuous ignition source for controlled disposal of combustible polymer waste in a fluidized bed reactor. 4,436,037, Cl. 110-245.000.

Kuraray Co., Ltd.: *See*—
Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Kutaka; Ishigura, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,436,939, Cl. 568-813.000.

Kurihara, Nobuo; Morooka, Yasuo; Nishikawa, Mitsuyo; Miura, Kiyoshi; and Nagahashi, Yoshitoshi, to Hitachi, Ltd. Method and apparatus for symptom diagnosis by monitoring vibration of shaft of rotary machine. 4,437,163, Cl. 364-508.000.

Kuroda, Takao; and Horii, Kenju, to Matsushita Electronics Corporation. Method for fabricating solid-state image sensor. 4,435,897, Cl. 29-572.000.

Kurosaki, Shiro, to Sumitomo Electric Industries, Ltd. Process for the production of an optical glass article. 4,436,542, Cl. 65-18.100.

Kurth, Duane G.: *See*—
Witalka, Jerome J.; Kurth, Duane G.; and Baber, David J., 4,437,157, Cl. 364-200.000.

Kurz, Robert A.: *See*—
Walsh, Edward J.; and Kurz, Robert A., 4,437,082, Cl. 336-58.000.

Kushi, Kenji: *See*—
Nakazima, Atushi; Edamatsu, Mitisuke; and Kushi, Kenji, 4,436,764, Cl. 427-54.100.

Kuwabara, Hideki: *See*—
Akiyama, Hiroyuki; Shimada, Sumio; Hirosawa, Kuninori; and Kuwabara, Hideki, 4,436,840, Cl. 521-58.000.

Kuwayama, Tetsuro: *See*—
Tanaka, Nobuyoshi; Hashimoto, Seiji; and Kuwayama, Tetsuro, 4,437,112, Cl. 358-44.000.

Kvasnikoff, Georges; and Voirin, Robert, to Societe Nationale Elf Aquitaine (Production). Process for the production of sulphur with increased energy recovery from a gas containing H_2S, SO_2, H_2 and/or CO. 4,436,716, Cl. 423-574.00R.

Kyle, James C. Terminal assembly. 4,436,955, Cl. 174-152.0GM.

Kyusyu Refractories Co., Ltd.: *See*—
Nishikawa, Yasuo; and Takahashi, Hirokuni, 4,436,678, Cl. 264-30.000.

L. & C. Steinmuller GmbH: *See*—
Leikert, Klaus; and Rennert, Klaus-Dieter, 4,436,038, Cl. 110-347.000.

Laghi, Aldo A., to General Electric Company. Mold for a liquid injection molding composition. 4,436,496, Cl. 425-543.000.

Laing, David H.: *See*—
Robinsky, Eli I.; and Laing, David H., 4,436,633, Cl. 210-791.000.

Laitar, Robert A., to Acme Resin Corporation. Polyurethane binder compositions. 4,436,881, Cl. 525-504.000.

Lalezari, Parviz, to Montefiore Hospital and Medical Center, Inc. Process and reagents for antibody detection involving erythrocyte agglutination. 4,436,825, Cl. 436-520.000.

Lambert, David A.; and Profet, Gary A., to General DataComm Industries, Inc. Method and apparatus for interleaving control signals. 4,437,182, Cl. 370-110.100.

Lamkewitz, Falk; and Riedmaier, Josef, to Webasto-Werk W. Baier GmbH & Co. Process and apparatus for determination and utilization of a quantity of preheating energy. 4,436,064, Cl. 123-142.50R.

Landi den Hartog BV: *See*—
Leeuwma, Derk B.; and de Groot, Marius, 4,436,110, Cl. 137-487.500.

Lane, Derek: *See*—
Hennessy, John B.; and Lane, Derek, 4,437,130, Cl. 360-94.000.

Lane, Stanley C., to Crown Zellerbach Corporation. Lime slaker. 4,436,703, Cl. 422-225.000.

Lang, Kurt: *See*—
Stahlecker, Fritz; Lang, Kurt; and Erhardt, Rolf, 4,435,952, Cl. 57-18.000.

Lange, Donald A.; Hanson, Marc C.; and Kriva, Kenneth J., to General Mills, Inc. Cryogenic process for decortication and hulling of sunflower seeds. 4,436,757, Cl. 426-438.000.

Lapatovich, Walter P.; Proud, Joseph M.; and Riseberg, Leslie A., to GTE Laboratories Incorporated. Low pressure plasma discharge formation of refractory coatings. 4,436,762, Cl. 427-39.000.

Larock, Richard C., to Iowa State University Research Foundation, Inc. Bicyclic prostaglandin analogs and method of synthesis. 4,436,934, Cl. 562-502.000.

Larrea, D. Juan, to Perfil En Frio, S.A. (PERFRISA). Panel joining system. 4,435,935, Cl. 52-461.000.

Larsen, Raymond B., to Acme Solar Works, Inc. Solar collector assembly and frame. 4,436,085, Cl. 126-450.000.

Larson, Daniel A., to North American Philips Electric Corp. Starting arrangement for high-intensity-discharge sodium lamp. 4,437,039, Cl. 315-60.000.

Larsson, Sven B.; and Andersson, Bengt U. I. Easily releasable blind rivets. 4,436,467, Cl. 411-34.000.

LaRussa, Joseph A., to Farrand Optical Co., Inc. Robotic vision system. 4,437,114, Cl. 358-101.000.

Lassig, Wolfgang: *See*—
Kuffner, Karl; Marx, Paul; and Lassig, Wolfgang, 4,436,810, Cl. 430-551.000.

Lauer, Reinhard; and Pfefferle, Dietmar, to Erwin Sick GmbH Optik-Elektronik. Piezoelectric apparatus for producing rotary oscillation of a mirror. 4,436,364, Cl. 350-6.600.

Laurel Bank Machine Co., Ltd.: *See*—
Goi, Kouichi, 4,436,300, Cl. 271-107.000.
Kokubo, Eiichi; and Osako, Kyoichi, 4,436,102, Cl. 133-2.000.

Laurent, Douglas J.: *See*—
Lipko, Robert J.; and Laurent, Douglas J., 4,436,520, Cl. 604-385.000.

Laurich-Trost, Victor R. Material handling apparatus. 4,436,183, Cl. 187-9.00E.

Lausch, H. Nevin: *See*—
Lindblom, Curtis H.; Lausch, H. Nevin; and Priepke, Edward H., 4,436,248, Cl. 241-101.700.

Lautensleger, Richard W.: *See*—
Seaburg, Paul A.; and Lautensleger, Richard W., 4,435,932, Cl. 52-263.000.

Lawson, Peter, to Rockwell International Corporation. Wood planing machine. 4,436,126, Cl. 144-130.000.

Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; Galian, Boris A.; Asoyants, Grigory B.; and Tishura, Vladimir I., to Institut Elektrosvarki Imeni E.O.Patona Akademii Nauk Ukrainskoi SSR. Pipe resistance butt welding apparatus. 4,436,974, Cl. 219-66.000.

Lebet, Jean-Pierre, to Baumgartner Papiers S.A. Apparatus for making transverse flow cigarette filters. 4,436,517, Cl. 493-45.000.

Lechaton, John S.: *See*—
Gaur, Santosh P.; Lechaton, John S.; and Srinivasan, Gurumakonda R., 4,435,898, Cl. 29-577.00C.

Lee, David R.; and McCreary, Robert B., to United States of America, Air Force. Anti-flutter apparatus for head mounted visual display. 4,437,113, Cl. 358-93.000.

Lee, Douglas J.: *See*—
Liu, Wei-Ti; and Lee, Douglas J., 4,437,025, Cl. 307-475.000.

Lee, William B. Lighting system for rotatable toy. 4,435,917, Cl. 46-228.000.

Leeuwma, Derk B.; and de Groot, Marius, to Landi den Hartog BV. Pressure regulating systems. 4,436,110, Cl. 137-487.500.

Leggett & Platt, Incorporated: *See*—
Lyons, Donald W., Jr.; and Wyatt, Everette L., 4,436,545, Cl. 71-25.000.

Legille, Edouard: *See*—
Schmidt, Paul; and Legille, Edouard, 4,436,293, Cl. 266-276.000.

Lehmann, Bernd: *See*—
Kleemann, Axel; Lehmann, Bernd; and Martens, Jurgen, 4,436,910, Cl. 546-245.000.

Leikam, Vernon. Spheroid pig launcher. 4,435,872, Cl. 15-104.06A.

Leikert, Klaus; and Rennert, Klaus-Dieter, to L. & C. Steinmuller GmbH. Method of preparing pulverized fuel withdrawn from a primary fuel flow for a pulverized fuel pilot light by means of a sifter device or a supplemental pulverizing plant. 4,436,038, Cl. 110-347.000.

Lekutat, Rolf: *See*—
Gebke, Klaus; Huhn, Friedrich; and Lekutat, Rolf, 4,436,676, Cl. 261-151.000.

Lembke, Manfred: *See*—
Hafner, Udo; Herth, Harro; Kienzle, Wolfgang; Knapp, Heinrich; Krauss, Rudolf; Lembke, Manfred; Paschke, Werner; and Sauer, Rudolf, 4,436,071, Cl. 123-472.000.

Lemelson, Jerome H. Sampling device. 4,436,978, Cl. 219-121.0LC.

Lemstra, Pieter J.: *See*—
Smith, Paul; Lemstra, Pieter J.; Kirschbaum, Robert; and Pijpers, Jacques P. L., 4,436,689, Cl. 264-204.000.

Lenard, Peter; and Beck, Ernst, to Vollmer Werke Maschinenfabrik GmbH. Sharpening machine for saws. 4,436,000, Cl. 76-41.000.

Lenertz, John B.; and Moore, Carroll E., to Farmhand, Inc. Quick attachment carrier assembly. 4,436,477, Cl. 414-723.000.

Lerich, Joel. Patient transporting device. 4,435,863, Cl. 5-81.00B.

Le Sonn, Marcel, to Thomson-CSF. X-Ray emitting assembly comprising a flange for assembling a sheath assembly and a beam limiting device. 4,437,188, Cl. 378-205.000.

L'Esperance, Francis A. Bifocal intraocular lens structure and spectacle actuation frame. 4,435,856, Cl. 3-13.000.

Lever Brothers Company: *See*—
Johnson, Richard S.; and Potter, John K., 4,436,644, Cl. 252-174.130.
Verhagen, Laurentius A. M.; and Warnaar, Leendert G., 4,436,760, Cl. 426-603.000.

Lewandowski, Edward F.; and Vrabec, John, to United States of America, Energy. Parallel-wire grid assembly with method and apparatus for construction thereof. 4,437,034, Cl. 313-348.000.

Lewis, Christopher: *See*—
Crisp, Malcolm; and Lewis, Christopher, 4,436,196, Cl. 194-100.00A.

Lewis, Norris E.; and Miller, Michael B., to Litton Systems, Inc. Optical slip ring assembly. 4,436,367, Cl. 350-96.200.

Li, Stephen: *See*—
Bissot, Thomas C.; and Li, Stephen, 4,436,599, Cl. 204-98.000.

Liberty Carton Co.: *See*—
Thorud, Stanley R., 4,436,354, Cl. 312-259.000.

Libit, Sidney M. Dispenser having a trigger-bulb pump. 4,436,225, Cl. 222-207.000.

Licentia Patent-Verwaltungs-GmbH: *See*—
Heilig, Thomas, 4,436,961, Cl. 179-77.000.

Liden, Hadar, to Gotaverken Arendal AB. Semi-submersible vessel. 4,436,050, Cl. 114-265.000.

Light Koki Co., Ltd.: *See*—
Shimizu, Fumio, 4,436,387, Cl. 350-556.000.

Lightolier Incorporated: *See*—
Donato, Anthony C.; and Russo, Neil, 4,437,142, Cl. 362-226.000.

Likins, Merle R., Jr.: *See*—
Stacy, Galen D.; and Likins, Merle R., Jr., 4,436,698, Cl. 422-62.000.

Lile, James B.; and Mathes, Dan C., Jr. Christmas tree stand having stabilized clamping members. 4,436,272, Cl. 248-527.000.

Lilliston Corporation: *See*—
Temple, William F.; and Daniels, Jesse, 4,436,484, Cl. 416-178.000.

Lin, Jiang-Jen, to Texaco Inc. Preparation of alkanols from synthesis gas. 4,436,837, Cl. 518-700.000.

Lin, Jiang-Jen, to Texaco Inc. Process for preparing alkanols and esters from synthesis gas. 4,436,838, Cl. 518-700.000.
Lindaberry, Harold L., to Pennwalt Corporation. Microencapsulated insecticidal persistency through the use of gelatin. 4,436,719, Cl. 424-37.000.
Lindauer Dornier Gesellschaft mbH: *See*—
Bosch, Alfred, 4,435,884, Cl. 26-93.000.
Lindblom, Curtis H.; Lausch, H. Nevin; and Priepke, Edward H., to Sperry Corporation. Adjustable shearbar apparatus. 4,436,248, Cl. 241-101.700.
Linde Aktiengesellschaft: *See*—
Karwat, Heinz, 4,436,707, Cl. 423-226.000.
Linde, E. Volker: *See*—
Brudermann, Uwe; Kunze, Karl-H.; Krehl, Gunter; Linde, E. Volker; and Lorenz, Dieter R., 4,436,320, Cl. 280-242.0WC.
Lindenstruth, Werner: *See*—
Bye, Donald J.; Stanistreet, Harold P.; and Lindenstruth, Werner, 4,436,503, Cl. 425-384.000.
Bye, Donald J.; Stanistreet, Harold P.; and Lindenstruth, Werner, 4,436,687, Cl. 264-164.000.
Linder, Charles G., to Garrett Corporation, The. Intake vortex whistle silencing apparatus and methods. 4,436,481, Cl. 415-119.000.
Lindley, William L. Ledge bed. 4,435,861, Cl. 5-65.000.
Lindquist, Richard A.: *See*—
Ante, Louis E.; Lindquist, Richard A.; and Roeschlein, Eugene R., 4,436,049, Cl. 114-254.000.
Link, Vincent F.; and Yamasaki, George K., to Westinghouse Electric Corp. Hollow cathode lamp with improved stability alloy for the cathode. 4,437,038, Cl. 313-633.000.
Linke, Hans-Ralf: *See*—
Batz, Hans-Georg; Linke, Hans-Ralf; Stellner, Klaus; and Weimann, Gunter, 4,436,828, Cl. 436-545.000.
Lion Corporation: *See*—
Yamamura, Masaaki; Igarashi, Taizo; and Ukigai, Toshiyuki, 4,436,527, Cl. 44-51.000.
Lipko, Robert J.; and Laurent, Douglas J., to Exxon Research & Engineering Co. Low gloss films of enhanced adhesion. 4,436,520, Cl. 604-385.000.
Lipovac, Joseph E.: *See*—
Dahl, James M.; Jacobs, Bernard B.; Lipovac, Joseph E.; Meglen, Ralph A.; and Ward, Donald W., 4,436,497, Cl. 425-28.00R.
Lipperts, Joseph H. F. G., to Hazemeijer B.V. Metal-ceramic joint. 4,436,241, Cl. 228-124.000.
Lisle Corporation: *See*—
Pool, James L., 4,435,873, Cl. 15-105.000.
Litton Industrial Products, Inc.: *See*—
Muszynski, Jerome D., 4,435,883, Cl. 26-71.000.
Litton Systems, Inc.: *See*—
Lewis, Norris E.; and Miller, Michael B., 4,436,367, Cl. 350-96.200.
Liu, Wei-Ti; and Lee, Douglas J., to Intel Corporation. MOS Buffer for receiving TTL level signals. 4,437,025, Cl. 307-475.000.
Liu, Yi-Tsung: *See*—
Ganguly, Ashit K.; Liu, Yi-Tsung; and Mallams, Alan K., 4,436,729, Cl. 424-180.000.
Ljung, Bo H. G.: *See*—
Kumar, Shri A.; Ljung, Bo H. G.; and Koper, James G., 4,436,423, Cl. 356-350.000.
Lockheed Corporation: *See*—
Peaster, Bertram A., 4,436,326, Cl. 285-178.000.
Lockwood, Alan C. Cable clamping device integrally formed with plastic molded electrical box. 4,436,952, Cl. 174-65.00R.
Lockwood, Edwin P.: *See*—
Bertenshaw, David R.; Lockwood, Edwin P.; and Brown, Anthony R., 4,437,169, Cl. 364-900.000.
Loffelmann, Walter: *See*—
Behnke, Joachim; and Loffelmann, Walter, 4,436,839, Cl. 521-64.000.
Logan, David J.; Webster, Ronald B.; and Sullivan, Daniel J., to Gerber Scientific Products, Inc. Automated measuring scale. 4,435,904, Cl. 33-143.00K.
Lohse, Friedrich: *See*—
Zondler, Helmut; Lohse, Friedrich; and Moser, Roland, 4,436,892, Cl. 528-117.000.
Long, Robert C.; and Peters, Richard K., to Eagle-Picher Industries, Inc. Radial mandrel. 4,436,574, Cl. 156-415.000.
Longrod, Scott J., to SCM Corporation. Ribbon drive clutch. 4,436,192, Cl. 192-43.100.
Lonscsak, Janos: *See*—
Kaderjak, Gyula; Veres, Albert; Barkoczy, Istvan; and Lonscsak, Janos, 4,436,954, Cl. 174-128.00R.
Loomis International Inc.: *See*—
Rathburn, Lloyd C., 4,436,334, Cl. 294-86.300.
L'Oreal: *See*—
Kalopissis, Gregoire; and Vanlerberghe, Guy, 4,436,909, Cl. 546-248.000.
Lorenz, Dieter R.: *See*—
Brudermann, Uwe; Kunze, Karl-H.; Krehl, Gunter; Linde, E. Volker; and Lorenz, Dieter R., 4,436,320, Cl. 280-242.0WC.
Loucks, George R., to General Electric Company. Block copolymers of polyphenylene oxides and sterically-hindered aromatic polycarbonates. 4,436,876, Cl. 525-394.000.
Lowe, Gary D.: *See*—
McKenzie, Joe A.; and Lowe, Gary D., 4,437,067, Cl. 328-167.000.
Lubrizol Corporation, The: *See*—
Higgins, William A.; and Perz, John S., 4,436,855, Cl. 524-145.000.
Lucas Industries Limited: *See*—
Farr, Glyn P. R., 4,435,960, Cl. 60-547.100.
Farr, Glyn P. R., 4,436,348, Cl. 303-115.000.
Ludwig, Richard H.; Quan, Wing C.; Husson, Alan L.; Dirnberger, Linus R.; and Polis, Marjorie J., to Westinghouse Electric Corp. Elevator system. 4,436,185, Cl. 187-29.00R.
Lugscheider, Walter: *See*—
Kilches, Helmut D.; Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, 4,436,290, Cl. 266-158.000.
Lurssen, Klaus: *See*—
Holmwood, Graham; Lurssen, Klaus; and Frohberger, Paul-Ernst, 4,436,907, Cl. 544-335.000.
Luste, Anita Y.: *See*—
Pakhomov, Gennady N.; Luste, Anita Y.; Kadnikova, Galina I.; and Kolesnik, Anatoly G., 4,436,720, Cl. 424-44.000.
Lyman, Dale E., to Mobil Oil Corporation. Extracting chromium (III) from aqueous solutions with 2-ethylhexyl acid phosphate. 4,436,705, Cl. 423-54.000.
Lyons, Donald W., Jr.; and Wyatt, Everette L., to Leggett & Platt, Incorporated. Process having the two-fold result of the disposal of waste pickle liquor and the production of fertilizer. 4,436,545, Cl. 71-25.000.
Maag Gear-Wheel & Machine Company Limited: *See*—
Seiberlich, Walter, 4,436,464, Cl. 409-233.000.
MacDonald, Murdo A., to Clyde Corporation. Article orienting apparatus. 4,436,197, Cl. 198-389.000.
Mack, Harry, to Mobil Oil Corporation. Method of optimizing signal-to-noise ratio in seismic exploration. 4,437,176, Cl. 367-38.000.
MacLeod, Norman J. Spill-resistant pet animal dish. 4,436,056, Cl. 119-72.000.
MacMillan, David: *See*—
Alfke, Peter H.; Rallapali, Krishna; and MacMillan, David, 4,437,158, Cl. 364-200.000.
Madison, Norman L.: *See*—
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Maeda, Haruo, to Olympus Optical Co., Ltd. F-θ Lens system. 4,436,383, Cl. 350-469.000.
Maeda Industries, Ltd.: *See*—
Ozaki, Nobuo; and Kaneko, Yoshimasa, 4,436,468, Cl. 411-248.000.
Maeda, Koji: *See*—
Suzuki, Sunao; and Maeda, Koji, 4,437,057, Cl. 324-78.00R.
Magnus, Wolf; Braach, Otto; Fischer, Dirk; and Wippig, Werner, to Hochtief AG, vorm. Gebr. Helfmann; and Bade & Theelen GmbH. Excavating machine for tunnels and galleries. 4,436,448, Cl. 405-143.000.
Magyar Tudomanyos Akademia Muszaki Fizikai Kutato Intezete: *See*—
Ferenczi, Gyorgy; Horvath, Peter; Toth, Ferenc; Kiss, Jozsef; and Boda, Janos, 4,437,060, Cl. 324-158.00D.
Maida, Osamu, to Nippon Kogaku K.K. Electroflash unit. 4,436,396, Cl. 354-416.000.
Makarewicz, Stanley R.: *See*—
Gardiner, James R.; Makarewicz, Stanley R.; Revitz, Martin; and Shepard, Joseph F., 4,437,108, Cl. 357-59.000.
Makimoto, Mitsuo; Endo, Haruyoshi; Kikuchi, Ko; and Yamashita, Sadahiko, to Matsushita Electric Industrial Co., Ltd. Coaxial filter having a plurality of resonators each having a bottomed cylinder. 4,437,076, Cl. 333-206.000.
Makley, James A., to Monarch Marking Systems, Inc. Hand-held labeler. 4,436,572, Cl. 156-384.000.
Malakhoff, Alexander: *See*—
Davis, Sydney; and Malakhoff, Alexander, 4,436,312, Cl. 277-34.000.
Mallams, Alan K.: *See*—
Ganguly, Ashit K.; Liu, Yi-Tsung; and Mallams, Alan K., 4,436,729, Cl. 424-180.000.
Mallet, Bernard, to Nadella. Articulation device having a double universal joint and a ball joint unit. 4,436,515, Cl. 464-114.000.
Maltz, Javier E., to Etablissement Texcontor. Semi-synthetic chitin derivative, the process for its preparation, and therapeutic compositions which contain it as active principle. 4,436,731, Cl. 424-18.000.
Manfredo, Joseph N.; and Hirsch, Selwyn R., to Garrett Corporation, The. Charge air cooler mounting arrangement. 4,436,145, Cl. 165-67.000.
Manley, Stephen C. Audio component coupler. 4,437,018, Cl. 307-38.000.
Manning, Charles R., to Assay Tec Associates, Inc. Ethylene oxide process dosimeter. 4,436,819, Cl. 436-1.000.
Manoski, Laurence A.: *See*—
Nordstrom, Eric W.; and Manoski, Laurence A., 4,436,044, Cl. 112-286.000.
Manov, Grigory L.: *See*—
Shevakin, Jury F.; Dobkin, Igor I.; Donskoi, Efim M.; Manov, Grigory L.; Zhdanov, Vasily V.; Berger, Elena S.; Popov, Valery M.; Pavlov, Alexei A.; and Akchurin, Rashid Z., 4,435,886, Cl. 29-33.00D.
Manei Kogyo Kabushiki Kaisha: *See*—
Watabe, Akinori; Yonezawa, Susumu; and Tanaka, Yoshiharu, 4,437,177, Cl. 369-45.000.
Manso, Hipolito S. Book holding device. 4,436,271, Cl. 248-460.000.
Marbach, Andre: *See*—
Stein, Claude; and Marbach, Andre, 4,436,859, Cl. 524-297.000.
Marc, Michel. Shoe insole. 4,435,910, Cl. 36-44.000.
Marcelon, Gilbert: *See*—
Hatinguais, Philippe; Patoiseau, Jean-Francois; and Marcelon, Gilbert, 4,436,749, Cl. 424-278.000.

Margetts, Peter K.: *See*—
Dietz, Raymond L.; Featherby, Michael; and Margetts, Peter K., 4,436,785, Cl. 428-427.000.

Margulies, Herman, to Sterling Drug Inc. Container and dispensing plate for a roll of pre-moistened towelettes. 4,436,221, Cl. 221-46.000.

Marhold, Albrecht; and Klauke, Erich, to Bayer Aktiengesellschaft. Process for the isomerization of alkylbenzotrifluorides. 4,436,941, Cl. 570-144.000.

Marin, Manuel. Safety door. 4,435,921, Cl. 49-395.000.

Marino, Frank J. Cargo restraining apparatus. 4,436,466, Cl. 410-118.000.

Marosi, Laszlo: *See*—
Broecker, Franz J.; Gruendler, Karl-Heinz; Marosi, Laszlo; Schwarzmann, Matthias; Triebskorn, Bruno; and Zirker, Guenter, 4,436,833, Cl. 502-176.000.

Mars Limited: *See*—
Taylor, Michael; and Withnall, Malcolm D. N., 4,436,222, Cl. 221-223.000.

Marshall and Williams Company: *See*—
Williamson, John G., Jr., 4,435,909, Cl. 34-82.000.

Martens, Jurgen: *See*—
Kleemann, Axel; Lehmann, Bernd; and Martens, Jurgen, 4,436,910, Cl. 546-245.000.

Martin, John E. Leak resistant plug assembly. 4,436,117, Cl. 138-89.000.

Martinez, Rafael. Multi-stop depth control. 4,436,462, Cl. 409-218.000.

Martorana, Piero A.: *See*—
Schonafinger, Karl; Beyerle, Rudi; Bohn, Helmut; Just, Melitta; Martorana, Piero A.; and Nitz, Rolf-Eberhard, 4,436,743, Cl. 424-269.000.

Maruhashi, Kenji; Kojima, Ichiro; Oguchi, Yutaka; Endoh, Noboru; and Satoh, Tetsuo, to Nippon Oil Company, Ltd. Process for separating porphyrins. 4,436,663, Cl. 260-245.910.

Maruyama, Masato: *See*—
Yamashita, Masahide; Oku, Hikaru; and Maruyama, Masato, 4,437,168, Cl. 364-900.000.

Maruzen Oil Co., Ltd.: *See*—
Sasaki, Takuma; Nakamichi, Kazuya; Tachibana, Yakudo; and Minami, Kiyoshi, 4,436,656, Cl. 260-112.00R.
Sasaki, Takuma; Nakamichi, Kazuya; Tachibana, Yakudo; and Minami, Kiyoshi, 4,436,657, Cl. 260-112.00R.

Marvin Glass & Associates: *See*—
Zaruba, John V.; and Terzian, Rouben T., 4,435,915, Cl. 46-12.000.

Marwick, Edward F. Larger contained nuclear explosion breeder reactor systems. 4,436,695, Cl. 376-317.000.

Marwitz, Heinrich: *See*—
Huhn, Karl; and Marwitz, Heinrich, 4,436,856, Cl. 524-211.000.

Marx, Paul: *See*—
Kuffner, Karl; Marx, Paul; and Lassig, Wolfgang, 4,436,810, Cl. 430-551.000.

Maryland Cup Corporation: *See*—
Winstead, Thomas W., 4,436,679, Cl. 264-40.300.

Marzocchi, Alfred: *See*—
Grossi, Anthony V.; Hahn, Louis T.; Marzocchi, Alfred; and Bolen, Charles E., 4,436,767, Cl. 427-138.000.
Grossi, Anthony V.; Hagelee, Leon A.; Hahn, Louis T.; and Marzocchi, Alfred, 4,436,864, Cl. 524-458.000.

Masamoto, Junzo: *See*—
Matsuzaki, Kazuhiko; Iwaisako, Toshiyuki; and Masamoto, Junzo, 4,436,900, Cl. 528-490.000.

Mashida, Hiromi: *See*—
Kokura, Satoshi; Nihei, Masayasu; Wachi, Hiroshi; Mashida, Hiromi; and Senda, Kousaku, 4,436,982, Cl. 219-130.510.

Mason, Charles D.: *See*—
Flood, Paul W.; Mason, Charles D.; and Schulze, Stephen R., 4,436,872, Cl. 525-179.000.

Masotto, Ermanno; and Gagliardi, Sergio, to Comitatonazionale Per Lienergia Nucleare. Process for the continuous purification of contaminated fluids and for conditioning the resulting concentrates. 4,436,655, Cl. 252-628.000.

Masuda, Masakazu; and Matsumoto, Hironori, to Okumura Corporation. Method of excavating a pile hole and an apparatus therefor. 4,436,167, Cl. 175-72.000.

Masui, Mikio: *See*—
Murasaki, Hiroshi; Ogawa, Masaya; Enoguchi, Yuji; and Masui, Mikio, 4,436,406, Cl. 355-3.0SH.

Masuoka, Fujio, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor memory device. 4,437,172, Cl. 365-182.000.

Masuoka, Fujio, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor memory device. 4,437,174, Cl. 365-218.000.

Masuyama, Tadahiro: *See*—
Nishida, Yoshiaki; Yano, Shunji; and Masuyama, Tadahiro, 4,436,594, Cl. 204-33.000.

Matam, Ltd.: *See*—
Rosinek, Shlomo; Rinkewich, Isaac; and Khurgin, Boris, 4,437,098, Cl. 340-870.020.

Mathe, Istvan: *See*—
Kasper, Alan H.; and Mathe, Istvan, 4,436,359, Cl. 339-61.00M.

Mather, David S., to Harvey Hubbell Incorporated. Method and apparatus for making ductile iron castings. 4,436,142, Cl. 164-337.000.

Mathes, Dan C., Jr.: *See*—
Lile, James B.; and Mathes, Dan C., Jr., 4,436,272, Cl. 248-527.000.

Matre, Tore: *See*—
Jacobsen, Kjell O.; Matre, Tore; Halvorsen, Rolf I.; Heie, Ingar H.; Myhrvold, Erling; and Berger, Ove R., 4,436,034, Cl. 102-334.000.

Matson, Walter T., to Metal Surfaces, Inc. Electroplating bath and method. 4,436,595, Cl. 204-40.000.

Matsuda, Fujio; Kato, Takazo; Honda, Tadatoshi; Terada, Kazuhiro; and Kogure, Yasuo, to Mitsui Toatsu Chemicals, Inc. Process for the preparation of indoles. 4,436,916, Cl. 548-508.000.

Matsuda, Fujio; and Kato, Takazo, to Mitsui Toatsu Chemicals, Inc. Process for the preparation of indoles. 4,436,917, Cl. 548-508.000.

Matsuda, Hiroto: *See*—
Sugitani, Hiroshi; Matsuda, Hiroto; and Ikeda, Masami, 4,437,100, Cl. 346-1.100.

Matsuda, Shinpei: *See*—
Takeuchi, Masato; Okada, Hideo; Tobita, Hiroshi; Okabe, Sigeru; Matsuda, Shinpei; Tonami, Munchiko; Tamura, Kohki; and Nakajima, Fumito, 4,436,794, Cl. 429-40.000.

Matsuda, Tadahito; Okumura, Masahide; Yokouchi, Hisatake; Ozasa, Susumu; and Kato, Yasuo, to Nippon Telegraph & Telephone Public Corporation; and Hitachi, Ltd. Electron beam control system. 4,437,008, Cl. 250-396.00R.

Matsuda, Yasuo: *See*—
Muto, Nobuyoshi; Nagase, Hiroshi; Sakai, Keijiro; and Matsuda, Yasuo, 4,437,051, Cl. 318-808.000.

Matsui, Kenji; and Teraoka, Fuminori, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Seatbelt retractor. 4,436,255, Cl. 242-107.40A.

Matsumoto, Hironori: *See*—
Masuda, Masakazu; and Matsumoto, Hironori, 4,436,167, Cl. 175-72.000.

Matsumoto, Shuichi; Hatori, Yoshinori; Murakami, Hitomi; and Yamamoto, Hideo, to Kokusai Denshin Denwa Kabushiki Kaisha. Interframe adaptive prediction system for television signals. 4,437,119, Cl. 358-136.000.

Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, to Kao Soap Co., Ltd. Hair rinse composition. 4,436,722, Cl. 424-70.000.

Matsuo, Kazuya: *See*—
Mochizuki, Taketoshi; Matsuo, Kazuya; Kudo, Mituo; Arai, Akira; Yamada, Junichi; Shono, Keizi; Aoki, Masaaki; Ohmori, Masaichi; and Nishi, Genichiro, 4,435,962, Cl. 62-175.000.

Matsuoka, Hiroki: *See*—
Nakatsuka, Hirotaka; Mizuno, Toshiaki; Yamazoe, Hisamitsu; and Matsuoka, Hiroki, 4,436,074, Cl. 123-492.000.

Matsuoka, Seiichi: *See*—
Yamaguchi, Katsunobu; Matsuoka, Seiichi; Hayashida, Takayuki; and Hayase, Tomio, 4,436,532, Cl. 48-209.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Ikeda, Nobuo; and Yoshimura, Hirofumi, 4,436,973, Cl. 219-10.55F.
Inai, Takayoshi; Saitoh, Teruo; and Sannomiya, Hisayuki, 4,437,111, Cl. 358-44.000.
Makimoto, Mitsuo; Endo, Haruyoshi; Kikuchi, Ko; and Yamashita, Sadahiko, 4,437,076, Cl. 333-206.000.
Miyoshi, Seizo; and Yamaguchi, Bunitsu, 4,437,178, Cl. 369-75.100.
Nakamura, Hiromichi; Urano, Haruya; Kojima, Tatsuo; and Sekiwa, Mitsunao, 4,436,006, Cl. 83-13.000.
Okada, Yoshio; Suzuki, Yoshiaki; Murakami, Ryohei; and Segawa, Yoshiaki, 4,436,352, Cl. 312-228.000.
Shinozaki, Nozomu; Neki, Shigeo; and Dohi, Takashi, 4,437,061, Cl. 324-166.000.

Matsushita Electronics Corporation: *See*—
Kuroda, Takao; and Horii, Kenju, 4,435,897, Cl. 29-572.000.

Matsushita, Yukinobu: *See*—
Tanaka, Osamu; Takeba, Kazuhiro; Saita, Hiroshi; Matsushita, Yukinobu; and Koyabu, Koji, 4,436,563, Cl. 148-26.000.

Matsuura, Masataka: *See*—
Funada, Fumiaki; Kozaki, Syuichi; Matsuura, Masataka; and Wada, Tomio, 4,436,379, Cl. 350-347.00E.

Matsuzaki, Kazuhiko; Iwaisako, Toshiyuki; and Masamoto, Junzo, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for deactivating polymerization catalyst. 4,436,900, Cl. 528-490.000.

Matsuzawa, Yoshio: *See*—
Tomino, Naoki; Ikeda, Osamu; Matsuzawa, Yoshio; and Inoue, Hideya, 4,436,792, Cl. 429-1.000.

Matthews, Patricia C.: *See*—
Walker, Thad O.; and Matthews, Patricia C., 4,436,638, Cl. 252-8.55R.

Mavilor Systemes: *See*—
Coquillart, Michel, 4,437,030, Cl. 310-227.000.

Maxwell, Richard. Chemical treatment for oil wells. 4,436,148, Cl. 166-53.000.

Mayer, Karl M.; and Schafer, Rudolf. Device for the continuous mixing of a dry finished mortar. 4,436,430, Cl. 366-13.000.

Mayo, Henry C.; and Korzendorfer, Joseph E., to United States of America, Army. Folding support with double-positive lock. 4,436,330, Cl. 292-263.000.

Mazac, Karel: *See*—
Pache, Norbert; and Mazac, Karel, 4,436,980, Cl. 219-123.000.

Mazza, Frank J.; and DeFilippis, John, to International Telephone and Telegraph Corporation. Telephone security system for cordless telephony. 4,436,957, Cl. 179-2.0EA.

McAlister, Roy E. Hot water supply tank assembly. 4,436,058, Cl. 122-13.00R.

McCausland, Thomas W., to Brockway, Inc. (NY). Aluminum bronze glassmaking molds. 4,436,544, Cl. 65-374.120.

McCleerey, Earl W., to AMP Incorporated. Hermaphroditic back shell cover. 4,436,361, Cl. 339-97.00P.

McCormick, Daniel F., to Brunswick Corporation. Connecting rod. 4,436,443, Cl. 403-14.000.

McCreary, Robert B.: *See*—
Lee, David R.; and McCreary, Robert B., 4,437,113, Cl. 358-93.000.
McCullough, John E., to Arthur D. Little, Inc. Method of fabricating two-piece scroll members for scroll apparatus and resulting scroll members. 4,436,495, Cl. 418-55.000.
McInerny, John. Dispenser for fluids and paper towels. 4,436,224, Cl. 222-183.000.
McKeny, Stanley T., executor: *See*—
Meginnis, Charles E., deceased, 4,436,375, Cl. 350-319.000.
McKenzie, Joe A.; and Lowe, Gary D., to United States of America, Navy. Transient error reduction for stored charged circuits. 4,437,067, Cl. 328-167.000.
McKillip, James B.; and Brown, Edmund J. Physical therapy apparatus. 4,436,303, Cl. 272-132.000.
McLaughlin, William J.: *See*—
Doery, Michael S.; Hanzlik, Edward W. C.; Adamek, John A.; and McLaughlin, William J., 4,436,301, Cl. 271-177.000.
McMenamin, Joseph C., to J.C. Schumacher Co. Vapor mass flow control system. 4,436,674, Cl. 261-64.00B.
McMonigle, Matthew J., to Aluminum Company of America. Magnetic removal of impurities from molten salt baths. 4,436,627, Cl. 210-695.000.
McQueen, Sidney J. Hiker's hatchet. 4,435,868, Cl. 7-158.000.
McVety, Ronald E.: *See*—
Shisler, Robert W.; and McVety, Ronald E., 4,436,242, Cl. 228-264.000.
Mead Johnson & Company: *See*—
Bequette, Robert J.; Hobbs, Linda G.; and Scott, Joseph A., 4,436,738, Cl. 424-238.000.
Medical Packaging Corporation: *See*—
Nason, Frederic L.; and Crane, Walton B., 4,436,243, Cl. 229-27.000.
Meginnis, Charles E., deceased (by McKeny, Stanley T., executor), to Pressure Products Company. Sight glass apparatus. 4,436,375, Cl. 350-319.000.
Meglen, Ralph A.: *See*—
Dahl, James M.; Jacobs, Bernard B.; Lipovac, Joseph E.; Meglen, Ralph A.; and Ward, Donald W., 4,436,497, Cl. 425-28.00R.
Mehlman, Stewart K.: *See*—
Andreini, Rockne J.; Mehlman, Stewart K.; Selines, Ronald J.; and Agrawal, Balkishan, 4,436,553, Cl. 75-52.000.
Mehren, Herbert; and Panik, Ferdinand, to Daimler-Benz Aktiengesellschaft. Externally track-guided vehicle, especially for the local public passenger traffic. 4,436,170, Cl. 180-131.000.
Melloch, Michael R.: *See*—
Gunshor, Robert L.; Pierret, Robert F.; and Melloch, Michael R., 4,437,031, Cl. 310-313.00B.
Meloy, Gilbert K., to Twinoak Products, Inc. Apparatus for cleansing and disinfecting toilet tanks and bowls. 4,435,857, Cl. 4-228.000.
Memorex Corporation: *See*—
Osborne, John R.; and Bischoff, Peter G., 4,436,593, Cl. 204-15.000.
Menconi, K. Anthony; and Gribauskas, Joseph F., Jr. Modular surface such as for use in sports. 4,436,779, Cl. 428-169.000.
Merant, Jean C.: *See*—
Deux, Alain; and Merant, Jean C., 4,435,950, Cl. 56-330.000.
Mercer, John E.; Olsen, John H.; and Elkins, Stephen, to Flow Industries, Inc. Articulated boom water jet cutting apparatus. 4,435,902, Cl. 30-296.00R.
Merck & Co., Inc.: *See*—
Baldwin, John J., 4,436,740, Cl. 424-263.000.
Merger, Franz: *See*—
Harder, Wolfgang; Merger, Franz; and Towae, Friedrich, 4,436,668, Cl. 260-463.000.
Messina, Samuel E. Decoy. 4,435,913, Cl. 43-3.000.
Metal Surfaces, Inc.: *See*—
Matson, Walter T., 4,436,595, Cl. 204-40.000.
Metallgesellschaft Aktiengesellschaft: *See*—
Krennrich, Otmar; Brendel, Gottfried; and Pietsch, Hartmut, 4,436,704, Cl. 423-11.000.
Rammler, Roland; and Bussmann, Alfons, 4,436,588, Cl. 201-12.000.
Schnabel, Wolfram; Scheu, Ernst; and Serbent, Harry, 4,436,286, Cl. 266-44.000.
Metallurgie Hoboken-Overpelt: *See*—
Viellefont, Jean F.; Hens, Carolus M.; and Tobback, Hubert J., 4,436,606, Cl. 204-225.000.
Metallwerk Max Brose GmbH & Co.: *See*—
Becker, Herbert, 4,436,250, Cl. 242-54.00R.
Methode Electronics, Inc.: *See*—
Swisher, William F., 4,436,970, Cl. 200-61.560.
Metro Hoist & Body Co., Inc.: *See*—
Petretti, Anthony V., 4,436,622, Cl. 210-232.000.
Metz, Paul, to Arbed S/A. Method of plating a wire with metal. 4,436,763, Cl. 427-47.000.
Metzger, Thomas J. Locking mechanism. 4,436,329, Cl. 292-150.000.
Meyer, Alfons. Apparatus for orderly transport and storage of flat objects. 4,435,944, Cl. 53-531.000.
Meyer, Hans U. Process for the capacitive measurement of lengths and of angles. 4,437,055, Cl. 324-61.00R.
Meyer, Richard C.; and Carroll, Edward L., to Beckman Instruments, Inc. Plunger operated pipet. 4,435,989, Cl. 73-864.140.
Meyerson, Bernard S.: *See*—
Brady, Michael J.; Meyerson, Bernard S.; and Warlaumont, John M., 4,436,797, Cl. 430-5.000.
Meyman, Usher. Bracelet. 4,435,956, Cl. 59-79.100.
Micro Consultants Limited: *See*—
Taylor, Richard J.; Kellar, Paul R. N.; and Hinson, Neil R., 4,437,121, Cl. 358-160.000.
Micro-Mega S.A.: *See*—
Garcia, Philippe, 4,436,512, Cl. 433-129.000.
Miersch, Eddehard F.; Pollmann, Kurt; Schettler, Helmut; and Zuhlke, Rainer, to International Business Machines Corporation. Monolithically integrated push-pull driver. 4,437,022, Cl. 307-270.000.
Mieth, Hans O. E.: *See*—
Tuchenhagen, Otto A. P.; Mieth, Hans O. E.; and Coura, Herbert R., 4,436,106, Cl. 137-240.000.
Migliarese, Jean-Louis: *See*—
Josien, Daniel; and Migliarese, Jean-Louis, 4,436,120, Cl. 138-93.000.
Mihayashi, Keiji: *See*—
Yagihara, Morio; Hirano, Tsumoru; and Mihayashi, Keiji, 4,436,808, Cl. 430-381.000.
Mikami, Ryuzo; and Nakasuji, Katsuyoshi, to Dow Corning Corporation. Durable primer composition. 4,436,787, Cl. 428-447.000.
Miles, Melvin H.; and Fine, Dwight A., to United States of America, Navy. Detection of nitrate esters using silver electrode. 4,436,590, Cl. 204-1.00T.
Miller, Edward C.: *See*—
Nichols, C. Ross; and Miller, Edward C., 4,435,969, Cl. 72-126.000.
Miller, Jack E., to Big Inch Marine Systems, Inc. Coupling. 4,436,325, Cl. 285-18.000.
Miller, James A., to Morgan Adhesives Company. Transmissive reflector including nacreous, pressure sensitive adhesive layer. 4,436,377, Cl. 350-345.000.
Miller, Jerry W.; and Rudnick, Paul J., to Ampex Corporation. Limited look-ahead means. 4,437,086, Cl. 340-347.0DD.
Miller, Kenneth F.; and Belfoure, Edward, to General Electric Company. Copolyester-carbonate blends. 4,436,879, Cl. 525-439.000.
Miller, Michael B.: *See*—
Lewis, Norris E.; and Miller, Michael B., 4,436,367, Cl. 350-96.200.
Minami, Kiyoshi: *See*—
Sasaki, Takuma; Nakamichi, Kazuya; Tachibana, Yakudo; and Minami, Kiyoshi, 4,436,656, Cl. 260-112.00R.
Sasaki, Takuma; Nakamichi, Kazuya; Tachibana, Yakudo; and Minami, Kiyoshi, 4,436,657, Cl. 260-112.00R.
Mingesz, August C.: *See*—
Kellogg, James D.; and Mingesz, August C., 4,436,288, Cl. 266-69.000.
Ministry of International Trade & Industry: *See*—
Hayashi, Yutaka; Yamanaka, Mitsuyuki; and Karasawa, Hideyuki, 4,436,761, Cl. 427-38.000.
Mitsuoka, Toyokazu, 4,437,045, Cl. 318-561.000.
Minnesota Mining and Manufacturing Co.: *See*—
Paul, Fred R., Jr.; and Mrozinski, James S., 4,436,213, Cl. 215-365.000.
Tullos, Robert N.; and Ostroff, Arthur, 4,437,049, Cl. 318-696.000.
Vanderwerf, Dennis F., 4,436,392, Cl. 353-38.000.
Vanderwerf, Dennis F., 4,436,393, Cl. 353-38.000.
Wyatt, Gerald A., 4,437,081, Cl. 335-229.000.
Minolta Camera Kabushiki Kaisha: *See*—
Murasaki, Hiroshi; Ogawa, Masaya; Enoguchi, Yuji; and Masui, Mikio, 4,436,406, Cl. 355-3.0SH.
Oka, Tateki, 4,436,413, Cl. 355-15.000.
Mirror Lite Company: *See*—
Schmidt, William P.; and Hutchinson, Franklin D., 4,436,372, Cl. 350-293.000.
Misawa Homes K.K.: *See*—
Umezu, Hiroaki; Kishi, Akira; and Yamagami, Hiroshi, 4,435,927, Cl. 52-79.130.
Misawa, Nobuo. Automatic washing machine for shoes. 4,435,964, Cl. 68-19.200.
Miskin, Renold A. Directory holder. 4,436,442, Cl. 402-73.000.
Mita Industrial Co., Ltd.: *See*—
Ikeda, Toshimitsu; Honda, Nobuyasu; and Nakano, Tetsuya, 4,436,803, Cl. 430-122.000.
Miyoshi, Hideo; Umeda, Tadashi; and Aoki, Takashi, 4,436,411, Cl. 355-14.00D.
Yamagata, Ryutaro; Kozuka, Nobuhiko; Nishihama, Hitoshi; Koyama, Shigeo; and Sakai, Kazutada, 4,436,412, Cl. 355-15.000.
Mitchell, Alvin L.: *See*—
Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., 4,437,006, Cl. 250-363.00S.
Mitchell, Hal D.; and Walker, Donald R., to Figgie International Inc. Flap hinge for a shoulder pad. 4,435,851, Cl. 2-2.000.
Mitchell, John W., Sr. Molded dental press. 4,436,511, Cl. 433-49.000.
Mitsubishi Chemical Industries Limited: *See*—
Niwa, Toshio; and Nagashima, Susumu, 4,436,522, Cl. 8-524.000.
Niwa, Toshio; and Hihara, Toshio, 4,436,906, Cl. 544-187.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Motoki, Yoshiaki, 4,436,969, Cl. 200-38.00R.
Nishizako, Shizutaka; Ishii, Isao; and Sakamoto, Yoshiaki, 4,436,831, Cl. 501-119.000.
Sugimoto, Hiroshi, 4,435,987, Cl. 73-862.170.
Suzuki, Sunao; and Maeda, Koji, 4,437,057, Cl. 324-78.00R.
Yamaguchi, Hiroshi; and Negishi, Nobumasa, 4,436,505, Cl. 431-76.000.
Yamamoto, Sakuei; and Nishida, Mitsuhiro, 4,437,027, Cl. 310-78.000.

Mitsubishi Gas Chemical Company Inc.: *See*—
Horie, Shigeru; Yamamoto, Yasuo; and Ikarashi, Takeo, 4,436,835, Cl. 502-208.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Omae, Takashi; Tanaka, Kisaburoo; Aoki, Masahiro; Hirayama, Fumitoshi; and Izaki, Susumu, 4,436,554, Cl. 75-128.00T.
Mitsubishi Metal Corporation: *See*—
Nakamura, Hiromichi; Urano, Haruya; Kojima, Tatsuo; and Sekiwa, Mitsunao, 4,436,006, Cl. 83-13.000.
Mitsubishi Paper Mills, Ltd.: *See*—
Iguchi, Shigeru; and Ebato, Seigo, 4,436,805, Cl. 430-248.000.
Okumura, Fumio; Higuchi, Masahiro; Kamei, Shun; and Miyauchi, Masahiro, 4,436,783, Cl. 428-411.000.
Mitsubishi Rayon Company, Ltd.: *See*—
Nakazima, Atushi; Edamatsu, Mitisuke; and Kushi, Kenji, 4,436,764, Cl. 427-54.100.
Mitsui Toatsu Chemicals, Inc.: *See*—
Matsuda, Fujio; Kato, Takazo; Honda, Tadatoshi; Terada, Kazuhiro; and Kogure, Yasuo, 4,436,916, Cl. 548-508.000.
Matsuda, Fujio; and Kato, Takazo, 4,436,917, Cl. 548-508.000.
Mitsumi Electric Co. Ltd.: *See*—
Ohyama, Sadahiro; Kato, Hiroshi; Yaguchi, Sadao; Baba, Mikito; and Okada, Morikazu, 4,437,140, Cl. 361-402.000.
Mitsuoka, Toyokazu, to Agency of Industrial Science & Technology; and Ministry of International Trade and Industry. Method and apparatus for controlling servomechanism by use of model reference servo-control system. 4,437,045, Cl. 318-561.000.
Miura, Kiyoshi: *See*—
Kurihara, Nobuo; Morooka, Yasuo; Nishikawa, Mitsuyo; Miura, Kiyoshi; and Nagahashi, Yoshitoshi, 4,437,163, Cl. 364-508.000.
Miura, Mituo; Kukino, Yoshinori; and Fujii, Takumi, to Takenaka Komuten Co., Ltd.; and Takenaka Doboku Co., Ltd. Machine for and method of hardening soft ground in depths. 4,436,453, Cl. 405-263.000.
Miyagi, Hideo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of and apparatus for controlling the fuel feeding rate of an internal combustion engine. 4,436,073, Cl. 123-491.000.
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Nishihara, Yoshiki; and Miyamoto, Kazumichi, 4,436,683, Cl. 264-107.000.
Miyauchi, Masahiro: *See*—
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Miyazaki, Jingo: *See*—
Tamama, Hiroshi; Ozawa, Yukio; Miyazaki, Jingo; Ito, Hiroshi; and Kinoshita, Toyohiro, 4,436,313, Cl. 277-80.000.
Miyazaki, Naomi; and Fujimura, Akira, to Onoda Chemical Industry Co., Ltd. Method of manufacturing potassium sulfate. 4,436,710, Cl. 423-552.000.
Miyoshi, Hideo; Umeda, Tadashi; and Aoki, Takashi, to Mita Industrial Co., Ltd. Toner dispenser and detector for an electrostatic copying apparatus. 4,436,411, Cl. 355-14.00D.
Miyoshi, Seizo; and Yamaguchi, Bunitsu, to Matsushita Electric Industrial Co., Ltd. Record player. 4,437,178, Cl. 369-75.100.
Mizuno, Jiro: *See*—
Fujita, Hironori; Arai, Tohru; and Mizuno, Jiro, 4,436,560, Cl. 148-6.000.
Mizuno, Toshiaki: *See*—
Nakatsuka, Hirotaka; Mizuno, Toshiaki; Yamazoe, Hisamitsu; and Matsuoka, Hiroki, 4,436,074, Cl. 123-492.000.
Mizusaki, Yoshinobu, to Nissin Kogyo Co., Ltd. Fluid-quantity alarming devices for the master cylinder. 4,437,091, Cl. 340-623.000.
Moba Holding Barneveld B.V.: *See*—
van 't Slot, Kornelis, 4,435,879, Cl. 17-11.000.
Mobil Oil Corporation: *See*—
Allen, Linus S., 4,436,997, Cl. 250-256.000.
Gentry, Larry L.; Moss, Herbert H.; Panicker, Narayana N.; and Wada, William T., 4,436,048, Cl. 114-230.000.
Gournay, Luke S., 4,435,977, Cl. 73-152.000.
Kaufman, Marvin L., 4,436,890, Cl. 528-93.000.
Lyman, Dale E., 4,436,705, Cl. 423-54.000.
Mack, Harry, 4,437,176, Cl. 367-38.000.
Mochida, Ei: *See*—
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, 4,436,724, Cl. 424-101.000.
Mochida, Haruo, to Nissan Motor Company, Limited. Electronic door locking system for an automotive vehicle. 4,437,137, Cl. 361-172.000.
Mochida Pharmaceutical Co., Ltd.: *See*—
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, 4,436,724, Cl. 424-101.000.
Mochizuki, Taketoshi; Matsuo, Kazuya; Kudo, Mituo; Arai, Akira; Yamada, Junichi; Shono, Keizi; Aoki, Masaaki; Ohmori, Masaichi; and Nishi, Genichiro, to Shin Meiwa Industry Co., Ltd.; and Hitachi, Ltd. Refrigerating apparatus. 4,435,962, Cl. 62-175.000.
Modcom, Inc.: *See*—
Klein, Paul E., 4,436,510, Cl. 433-4.000.
Mohlin, Kjell, to Aktiebolaget Bofors. Muzzle brake for artillery guns. 4,436,017, Cl. 89-14.00C.
Mohr, Ernst, to Fides Treuhand GmbH. Hot-gas piston-type engine and use thereof in heating, cooling and power plants. 4,435,959, Cl. 60-512.000.
Moller, Heinz: *See*—
Eisele, Hermann; Moller, Heinz; and Schmitt, Manfred, 4,437,154, Cl. 364-187.000.
Mollring, Friedrich K.: *See*—
Fischer, Horst; and Mollring, Friedrich K., 4,436,385, Cl. 350-529.000.
Molnar, Istvan; Thiele, Kurt; Geissmann, Felix; and Jahn, Ulrich, to Siegfried Aktiengesellschaft. 1H- and 2H- indazole derivatives. 4,436,913, Cl. 548-316.000.
Monarch Marking Systems, Inc.: *See*—
Makley, James A., 4,436,572, Cl. 156-384.000.
Monarch Wine Co., Inc.: *See*—
Zaltsman, Efim, 4,435,942, Cl. 53-489.000.
Monsanto Company: *See*—
Frederick, Roger A.; and Moody, Jerry W., 4,436,577, Cl. 156-617.0SP.
Monsheimer, Rolf: *See*—
Kreuzburg, Eberhard; Von Der Pahle, Dietrich J.; Monsheimer, Rolf; Pfleiderer, Ernst; and Taeger, Tilman, 4,436,624, Cl. 210-632.000.
Montedison S.p.A.: *See*—
Perdomini, Luciano; Tonon, Elia; and Paronetto, Lanfranco, 4,436,755, Cl. 426-15.000.
Montefiore Hospital and Medical Center, Inc.: *See*—
Lalezari, Parviz, 4,436,825, Cl. 436-520.000.
Moodie, Eldon E.; and Burns, Richard D., to General Electric Company. Methods for making connection insulators. 4,436,585, Cl. 156-73.100.
Moody, Jerry W.: *See*—
Frederick, Roger A.; and Moody, Jerry W., 4,436,577, Cl. 156-617.0SP.
Moore, Carroll E.: *See*—
Lenertz, John B.; and Moore, Carroll E., 4,436,477, Cl. 414-723.000.
Moore, Wilcy I.; and Tassoni, Ronald L., to Cocal, Inc. Froth flotation ore beneficiation process utilizing enhanced gasification and flow techniques. 4,436,617, Cl. 209-3.000.
Morais, Don; and Owen, Daniel V., to General Electric Company. Starting and operating circuit for gaseous discharge lamps. 4,437,042, Cl. 315-289.000.
Morgan Adhesives Company: *See*—
Miller, James A., 4,436,377, Cl. 350-345.000.
Morgan Industries, Inc.: *See*—
Smith, Glen H., 4,436,278, Cl. 251-130.000.
Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., to Scientific Measurement Systems, Inc. Method and apparatus for measuring radiation in computer-assisted tomography and radiographic applications. 4,437,006, Cl. 250-363.00S.
Morganson, Neal E.; and Vayda, Adam V., to Gulf Research & Development Company. Olefin oligomerization using boron trifluoride and a three-component cocatalyst. 4,436,947, Cl. 585-525.000.
Mori, Chuzo, to Carl Manufacturing Co., Ltd. Perforating jig. 4,435,906, Cl. 33-185.00R.
Mori, Kaoru: *See*—
Isowa, Yoshikazu; Ohmori, Muncki; Mori, Kaoru; Ichikawa, Tetsuya; Nonaka, Yuji; Kihara, Keiichi; Oyama, Kiyotaka; Satoh, Heijiro; and Nishimura, Shigeaki, 4,436,925, Cl. 560-19.000.
Mori, Kei. Sunbeam concentrating and collecting apparatus. 4,436,083, Cl. 126-417.000.
Mori, Takashi, to Sumitomo Heavy Industries, Ltd. Process for making steel from direct-reduced iron. 4,436,551, Cl. 75-12.000.
Moriguchi, Haruhiko: *See*—
Inui, Toshiharu; and Moriguchi, Haruhiko, 4,437,102, Cl. 346-76.0PH.
Morino, Yukio, to Seiko Koki Kabushiki Kaisha. Distance detector device. 4,436,418, Cl. 356-1.000.
Morisono, Akira, to Honda Giken Kogyo Kabushiki Kaisha. Vehicular power unit supporting device. 4,436,174, Cl. 180-227.000.
Morley, James P.: *See*—
Hatch, Seymour A.; and Morley, James P., 4,436,315, Cl. 277-92.000.
Morooka, Yasuo: *See*—
Kurihara, Nobuo; Morooka, Yasuo; Nishikawa, Mitsuyo; Miura, Kiyoshi; and Nagahashi, Yoshitoshi, 4,437,163, Cl. 364-508.000.
Morris, Charles K. Carton blank with integral handle. 4,436,244, Cl. 229-52.00B.
Morris, Donald E.: *See*—
Christopher, Chris J.; Wenninger, Fred W.; Morris, Donald E.; Covington, Wayne F.; Folsom, Jerry B.; Beyers, Joseph W.; Nairn, John H.; and Osborne, Jeffrey C., 4,437,156, Cl. 364-200.000.
Morse, Milton, to APM Corporation. Sealing means for telephone cover device. 4,436,965, Cl. 179-184.000.
Moschitz, Gerhard; and Schoonhoven, Richard, to Siemens Aktiengesellschaft. Method and circuit arrangement for the acceptance and temporary storage of data signals in a switching system. 4,437,170, Cl. 364-900.000.
Moser, Roland: *See*—
Zondler, Helmut; Lohse, Friedrich; and Moser, Roland, 4,436,892, Cl. 528-117.000.
Moss, Herbert H.: *See*—
Gentry, Larry L.; Moss, Herbert H.; Panicker, Narayana N.; and Wada, William T., 4,436,048, Cl. 114-230.000.
Moss, Rodney H.; and Faktor, Marc M., to British Telecommunications. Metal organic vapor deposition procedure for preparing group III—V compounds on a heated substrate. 4,436,769, Cl. 427-252.000.

Motobayashi, Kozo: *See*—
Seiki, Kazuo; Motobayashi, Kozo; Yoshizawa, Toshio; Yoshida, Yoshiaki; and Onoue, Keiji, 4,435,954, Cl. 57-408.000.

Motoki, Yoshiaki, to Mitsubishi Denki Kabushiki Kaisha. Timing device for time switch. 4,436,969, Cl. 200-38.00R.

Motor Wheel Corporation: *See*—
Strader, Don S., 4,436,139, Cl. 164-112.000.

Motta, Carlo: *See*—
Simonotti, Lucio; and Motta, Carlo, 4,436,182, Cl. 186-37.000.

MPD Technology Corporation: *See*—
Turillon, Pierre P., 4,436,537, Cl. 55-387.000.

Mrazek, Gustav; and Obenaus, Franz, to U.S. Philips Corporation. Cassette comprising a capping device and/or a cleaning device for a printing head of an ink jet printer. 4,437,105, Cl. 346-140.00R.

Mrozinski, James S.: *See*—
Paul, Fred R., Jr.; and Mrozinski, James S., 4,436,213, Cl. 215-365.000.

Muench, Volker: *See*—
Brandstetter, Franz; Muench, Volker; Naarmann, Herbert; and Priebe, Edmund, 4,436,854, Cl. 524-139.000.

Muller-Albrecht, Horst: *See*—
Neuhaus, Karl-Friedrich; Muller-Albrecht, Horst; Dollhausen, Manfred; and Perrey, Hermann, 4,436,570, Cl. 156-273.300.

Muller, Felix: *See*—
Muller, Hans; Knopfel, Hans-Peter; Muller, Felix; and Kretz, Rolf H., 4,436,814, Cl. 435-162.000.

Muller, Hans; Knopfel, Hans-Peter; Muller, Felix; and Kretz, Rolf H., to PEC Process Engineering Company. Method for the recovery of enzymes after the treatment of starch-containing raw materials used for the production of fermentation alcohol. 4,436,814, Cl. 435-162.000.

Muller, Manfred: *See*—
Friedrich, Ronald; and Muller, Manfred, 4,436,697, Cl. 420-440.000.

Mulligan, William L., to Parks-Cramer Company. Fiber waste disposal system for traveling pneumatic cleaners. 4,435,876, Cl. 15-312.00R.

Multiform Desiccants, Inc.: *See*—
Cullen, John S.; Incorvia, Samuel A.; and Vogt, James A., 4,436,623, Cl. 210-282.000.

Muma, G. Arnold: *See*—
Scheie, Carl E.; and Muma, G. Arnold, 4,437,010, Cl. 250-459.100.

Muraishi, Masakazu, to Nissan Motor Company, Limited. Support mechanism of swivel seat structure. 4,436,270, Cl. 248-416.000.

Murakami, Hitomi: *See*—
Matsumoto, Shuichi; Hatori, Yoshinori; Murakami, Hitomi; and Yamamoto, Hideo, 4,437,119, Cl. 358-136.000.

Murakami, Ryohei: *See*—
Okada, Yoshio; Suzuki, Yoshiaki; Murakami, Ryohei; and Segawa, Yoshiaki, 4,436,352, Cl. 312-228.000.

Murakami, Shohachi: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,436,921, Cl. 544-238.000.

Murakawa, Katsuji: *See*—
Hata, Shuji; Yamada, Toshio; and Murakawa, Katsuji, 4,435,994, Cl. 74-606.00R.

Muramatsu, Motoyasu: *See*—
Suzuki, Yukio; Sato, Kunihiko; and Muramatsu, Motoyasu, 4,436,072, Cl. 123-488.000.

Murasaki, Hiroshi; Ogawa, Masaya; Enoguchi, Yuji; and Masui, Mikio, to Minolta Camera Kabushiki Kaisha. Paper feeder for recording apparatus. 4,436,406, Cl. 355-3.0SH.

Murase, Hiroyuki: *See*—
Nakakobara, Takeshi; Sakaguchi, Kiyoshi; Ueda, Fumio; and Murase, Hiroyuki, 4,436,062, Cl. 123-90.270.

Murphy, Milford R.; and Haskins, Delbert E., to Textron Inc. Multiple loop control system. 4,436,018, Cl. 91-363.00A.

Murray, John A., to Conger/Murray Systems, Inc. Apparatus for curing concrete products. 4,436,498, Cl. 425-73.000.

Muszynski, Jerome D., to Litton Industrial Products, Inc. Stretch ratio control circuit for multiple station web stretching apparatus. 4,435,883, Cl. 26-71.000.

Muto, Nobuyoshi; Nagase, Hiroshi; Sakai, Keijiro; and Matsuda, Yasuo, to Hitachi, Ltd. Method and apparatus for controlling induction motor. 4,437,051, Cl. 318-808.000.

Myers, John W.; and Strope, Daniel J., to Phillips Petroleum Company. Olefin conversion process. 4,436,949, Cl. 585-664.000.

Myhrvold, Erling: *See*—
Jacobsen, Kjell O.; Matre, Tore; Halvorsen, Rolf I.; Heie, Ingar H.; Myhrvold, Erling; and Berger, Ove R., 4,436,034, Cl. 102-334.000.

Naarmann, Herbert: *See*—
Brandstetter, Franz; Muench, Volker; Naarmann, Herbert; and Priebe, Edmund, 4,436,854, Cl. 524-139.000.
Hinselmann, Klaus; Naarmann, Herbert; Echte, Adolf; Heil, Eduard; Nikles, Albert; Reffert, Rudi W.; and Hambrecht, Juergen, 4,436,870, Cl. 525-53.000.

Nacken, Lambertus J. G.; and Baas, Albertus H., to Shell Internationale Research Maatschappij B. V. Process for the recovery of pentavalent vanadium compounds from acid catalyst extracts. 4,436,706, Cl. 423-65.000.

Nadella: *See*—
Mallet, Bernard, 4,436,515, Cl. 464-114.000.

Nagahashi, Yoshitoshi: *See*—
Kurihara, Nobuo; Morooka, Yasuo; Nishikawa, Mitsuyo; Miura, Kiyoshi; and Nagahashi, Yoshitoshi, 4,437,163, Cl. 364-508.000.

Nagano Keiki Seisakusho, Ltd.: *See*—
Yamaizumi, Kazuo, 4,436,494, Cl. 417-403.000.

Nagaoka, Akinobu: *See*—
Imada, Isuke; Nagaoka, Akinobu; and Hirata, Minoru, 4,436,753, Cl. 424-331.000.

Nagase, Hiroshi: *See*—
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Nagashima, Susumu: *See*—
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Nagati, Rashed N., to Pennsylvania Engineering Corporation. Metallurgical vessel suspension system. 4,436,291, Cl. 266-246.000.

Nairn, John H.: *See*—
Christopher, Chris J.; Wenninger, Fred W.; Morris, Donald E.; Covington, Wayne F.; Folsom, Jerry B.; Beyers, Joseph W.; Nairn, John H.; and Osborne, Jeffrey C., 4,437,156, Cl. 364-200.000.

Naito, Sachio: *See*—
Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, 4,436,722, Cl. 424-70.000.

Naito, Yoshiyuki: *See*—
Ueno, Ryuzo; Sakota, Kazuyuki; Kawata, Keiji; and Naito, Yoshiyuki, 4,436,670, Cl. 260-465.00B.

Nakajima, Akira: *See*—
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Nakajima, Fumito: *See*—
Takeuchi, Masato; Okada, Hideo; Tobita, Hirosi; Okabe, Sigeru; Matsuda, Shinpei; Tonami, Munehiko; Tamura, Kohki; and Nakajima, Fumito, 4,436,794, Cl. 429-40.000.

Nakakobara, Takeshi; Sakaguchi, Kiyoshi; Ueda, Fumio; and Murase, Hiroyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rocker arm mechanism in overhead cam type engine. 4,436,062, Cl. 123-90.270.

Nakamichi, Kazuya: *See*—
Sasaki, Takuma; Nakamichi, Kazuya; Tachibana, Yakudo; and Minami, Kiyoshi, 4,436,656, Cl. 260-112.00R.
Sasaki, Takuma; Nakamichi, Kazuya; Tachibana, Yakudo; and Minami, Kiyoshi, 4,436,657, Cl. 260-112.00R.

Nakamura, Hideo: *See*—
Sakuraya, Toshikazu; Nakamura, Hideo; Harada, Nobuo; Fujii, Tetsuya; and Emi, Toshihiko, 4,436,287, Cl. 266-47.000.

Nakamura, Hiromichi; Urano, Haruya; Kojima, Tatsuo; and Sekiwa, Mitsunao, to Matsushita Electric Industrial Co., Ltd.; and Mitsubishi Metal Corporation. Method for cutting lead wires. 4,436,006, Cl. 83-13.000.

Nakamura, Keijiroh: *See*—
Endoh, Koichi; Tsuji, Nobuhiko; Nakamura, Keijiroh; Hamada, Toshiyoshi; and Ishida, Keiichi, 4,436,812, Cl. 435-14.000.

Nakamura, Norihiko; and Shibata, Yoshiaki, to Toyota Jidosha Kabushiki Kaisha. Ignition system of an internal combustion engine. 4,436,068, Cl. 123-310.000.

Nakamura, Norimi: *See*—
Okuyama, Shigeaki; Nakamura, Norimi; and Hashimoto, Osami, 4,435,907, Cl. 33-366.000.

Nakanishi, Motoyasu, to Kabushiki Kaisha Cubic Engineering. Printing apparatus. 4,436,571, Cl. 156-384.000.

Nakano, Joji: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,436,921, Cl. 544-238.000.

Nakano, Tetsuya: *See*—
Ikeda, Toshimitsu; Honda, Nobuyasu; and Nakano, Tetsuya, 4,436,803, Cl. 430-122.000.

Nakano, Yoshitomo: *See*—
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Nakashima, Tuneyasu: *See*—
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Nakasuji, Katsuyoshi: *See*—
Mikami, Ryuzo; and Nakasuji, Katsuyoshi, 4,436,787, Cl. 428-447.000.

Nakatsuka, Hirotaka; Mizuno, Toshiaki; Yamazoe, Hisamitsu; and Matsuoka, Hiroki, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for controlling the fuel injection in internal combustion engine. 4,436,074, Cl. 123-492.000.

Nakatsuyama, Takashi; and Nakano, Yoshitomo, to Sony Corporation. Automatic telephone answering device. 4,436,959, Cl. 179-6.090.

Nakaya, Shunichi; and Araoka, Katsumasa, to Tokyo Shibaura Denki Kabushiki Kaisha. Power absorbing device for low-temperature refrigerating machine. 4,437,016, Cl. 290-1.00R.

Nakayama, Shunsuke: *See*—
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, 4,436,772, Cl. 427-379.000.
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, 4,436,773, Cl. 427-380.000.

Nakayama, Yasuharu: *See*—
Aihara, Tetsuo; Nakayama, Yasuharu; Umeyama, Koichi; Sawada, Kozo; and Shinohara, Masaaki, 4,436,849, Cl. 523-501.000.

Nakazawa, Shigeo; and Sato, Shintaro, to Nissan Motor Co., Ltd. Method of producing ring-shaped metal parts. 4,435,973, Cl. 72-327.000.

Nakazima, Atushi; Edamatsu, Mitisuke; and Kushi, Kenji, to Mitsubishi Rayon Company, Ltd. Method and apparatus for surface-hardening treatment of synthetic resin shaped articles. 4,436,764, Cl. 427-54.100.

Nalkin, Irving: *See*—
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Namazue, Hirotoshi: *See*—
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Namura, Hideki: *See*—
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Narato, Kiyoshi; Ohtsuka, Keizou; Inada, Tooru; and Watanabe, Takashi, to Hitachi, Ltd. Monitoring system for checking electric rotary machine for local overheating. 4,436,699, Cl. 422-68.000.

Nason, Frederic L.; and Crane, Walton B., to Medical Packaging Corporation. Storage file for slides and tissue blocks. 4,436,243, Cl. 229-27.000.

National Gypsum Company: *See*—
Krowl, Thomas R., 4,435,933, Cl. 52-309.100.
Rutkowski, Edward J., 4,435,936, Cl. 52-481.000.
Rutkowski, Edward J.; and Krowl, Thomas R., 4,435,938, Cl. 52-521.000.
Sowinski, Gerard T., 4,436,204, Cl. 206-525.000.

National Research Development Corporation: *See*—
Glasser, Fredrik P.; and Gunawardane, Richard P., 4,436,546, Cl. 71-36.000.
Wickramasinghe, Hemantha K., 4,435,985, Cl. 73-642.000.

Navon, Uri: *See*—
Ron, Moshe; Kleiner, Matvei; and Navon, Uri, 4,436,539, Cl. 62-4.000.

Naylor, Carter G., to Texaco, Inc. Oil recovery method utilizing glyceryl ether sulfonates. 4,436,672, Cl. 260-512.00R.

Negishi, Nobumasa: *See*—
Yamaguchi, Hiroshi; and Negishi, Nobumasa, 4,436,505, Cl. 431-76.000.

Negoro, Ikuo; and Iwanade, Hisao, to Asahi Kogaku Kogyo Kabushiki Kaisha. Mirror scanning control mechanism in variable magnification type copying machine. 4,436,416, Cl. 355-57.000.

Neki, Shigeo: *See*—
Shinozaki, Nozomu; Neki, Shigeo; and Dohi, Takashi, 4,437,061, Cl. 324-166.000.

Nelson, Garth C.; White, Henry J.; and Nelson, Gerald B., to Papakube Corporation. Auger feed arrangement for cubing machine. 4,436,502, Cl. 425-331.000.

Nelson, Gerald B.: *See*—
Nelson, Garth C.; White, Henry J.; and Nelson, Gerald B., 4,436,502, Cl. 425-331.000.

Nelson & Johnson Engineering: *See*—
Ciciora, John A., 4,436,030, Cl. 100-268.000.

Nelson, Stanford C.: *See*—
Walters, Anthony J.; and Nelson, Stanford C., 4,436,604, Cl. 204-196.000.

Nemeth, Carol A.: *See*—
Brossman, James W., Jr.; Nemeth, Carol A.; and Shapiro, Alan K., 4,436,474, Cl. 414-417.000.

Nemetz, Herbert. Method and apparatus for aerobic decomposition or drying of organic waste material. 4,436,817, Cl. 435-313.000.

Nepon, Juanita. Arthritis composition of matter, and methods of preparing and utilizing same. 4,436,723, Cl. 424-95.000.

Nesler, Todd G. Goggle. 4,435,852, Cl. 2-436.000.

Neubert, Peter: *See*—
Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Neubert, Peter, 4,436,735, Cl. 424-182.000.

Neuhaus, Karl-Friedrich; Muller-Albrecht, Horst; Dollhausen, Manfred; and Perrey, Hermann, to Bayer Aktiengesellschaft. Process for bonding films. 4,436,570, Cl. 156-273.300.

Newbanks, James A. Guy wire protector device. 4,435,931, Cl. 52-147.000.

Newcomer, John R.: *See*—
Barlow, Gordon A.; Newcomer, John R.; and Bezark, Fred, 4,436,309, Cl. 273-267.000.

Newman, Richard L. Sound system for a musical instrument. 4,437,189, Cl. 381-91.000.

Nichols, C. Ross; and Miller, Edward C., to Ball Corporation. Spinflanger for beverage containers. 4,435,969, Cl. 72-126.000.

Nicholson, Charles B., to Albany International Corporation. Method of manufacturing a sanitary fan spray nozzle. 4,435,891, Cl. 29-157.00C.

Nicol, Klaus, to Nicol, Klaus. Force sensing means and method of producing such sensing means. 4,437,138, Cl. 361-283.000.

Nielsen, Kurt F.: *See*—
Jensen, Niels D.; Komossa, Horst; and Nielsen, Kurt F., 4,436,486, Cl. 417-45.000.

Niertit, Frank: *See*—
Brightman, Barrie; and Niertit, Frank, 4,437,096, Cl. 340-825.960.

NIFCO, Inc.: *See*—
Watanabe, Koji, 4,436,253, Cl. 242-74.100.
Yuda, Takuo; and Notoya, Yoshiaki, 4,436,273, Cl. 248-549.000.

Nihei, Masayasu: *See*—
Kokura, Satoshi; Nihei, Masayasu; Wachi, Hiroshi; Mashida, Hiromi; and Senda, Kousaku, 4,436,982, Cl. 219-130.510.

Nihon Ceramic Co., Ltd.: *See*—
Taniguchi, Yoshiharu; Edano, Shigeki; and Akiyama, Masanori, 4,437,002, Cl. 250-338.000.

Nikkiso Co., Ltd.: *See*—
Ishiyama, Masashi; and Ishibashi, Michinori, 4,436,491, Cl. 417-385.000.

Nikko Industry Co., Ltd.: *See*—
Inai, Kunihiro, 4,437,186, Cl. 373-9.000.

Nikles, Albert: *See*—
Hinselmann, Klaus; Naarmann, Herbert; Echte, Adolf; Heil, Eduard; Nikles, Albert; Reffert, Rudi W.; and Hambrecht, Juergen, 4,436,870, Cl. 525-53.000.

Nilsen, Carl J., to SWS, Incorporated. Apparatus for continuous laser welding. 4,436,979, Cl. 219-121.0LC.

Nilson, Warren C.; and Rabe, Thomas L., to Buckstaff Company, Inc., The. Furniture joint assembly. 4,436,342, Cl. 297-445.000.

Nilsson, Per, to AB Welin. Method and a device for pivoting an accommodation ladder. 4,436,180, Cl. 182-97.000.

Ninet, Jean-Louis; and Vaillant, Robert, to Ateliers et Chantiers de Bretagne-ABC. Device for positioning an off-shore platform on its support structure. 4,436,454, Cl. 405-204.000.

Nippon Chuzo Kabushiki Kaisha: *See*—
Kondo, Toshio, 4,436,138, Cl. 164-5.000.

Nippon Electric Co., Ltd.: *See*—
Akahori, Masaaki; Ohyagi, Takashi; and Nishimura, Shozo, 4,437,095, Cl. 340-825.440.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Takeuchi, Atsushi, 4,437,180, Cl. 369-217.000.

Nippon Kogaku K.K.: *See*—
Fukuhara, Toru, 4,436,395, Cl. 354-406.000.
Maida, Osamu, 4,436,396, Cl. 354-416.000.
Tomino, Naoki; Ikeda, Osamu; Matsuzawa, Yoshio; and Inoue, Hideya, 4,436,792, Cl. 429-1.000.

Nippon Kokan Kabushiki Kaisha: *See*—
Inoue, Morio; Hoshino, Satoshi; Namura, Hideki; and Watari, Takashi, 4,436,482, Cl. 416-1.000.

Nippon Mining Co., Ltd.: *See*—
Imamura, Tatsuo; and Katoh, Mitsuo, 4,436,600, Cl. 204-140.000.

Nippon Oil Company, Ltd.: *See*—
Maruhashi, Kenji; Kojima, Ichiro; Oguchi, Yutaka; Endoh, Noboru; and Satoh, Tetsuo, 4,436,663, Cl. 260-245.910.

Nippon Oil and Fats Co., Ltd.: *See*—
Yamamura, Masaaki; Igarashi, Taizo; and Ukigai, Toshiyuki, 4,436,527, Cl. 44-51.000.

Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See*—
Kita, Yuichi; Sakamoto, Kentaro; and Sato, Takahisa, 4,436,922, Cl. 549-251.000.

Nippon Soken, Inc.: *See*—
Tomita, Masahiro; and Takagi, Shigeru, 4,436,538, Cl. 55-482.000.

Nippon Steel Corporation: *See*—
Takahashi, Nobuyuki; Furuno, Yoshikuni; and Fukunaga, Masaaki, 4,436,561, Cl. 148-12.00F.
Tsuyama, Yoshito; Shimazaki, Yasumi; Kakita, Kazutoshi; and Hirokawa, Toshio, 4,436,239, Cl. 228-17.000.

Nippon Telegraph & Telephone Public Corporation: *See*—
Akahori, Masaaki; Ohyagi, Takashi; and Nishimura, Shozo, 4,437,095, Cl. 340-825.440.
Matsuda, Tadahito; Okumura, Masahide; Yokouchi, Hisatake; Ozasa, Susumu; and Kato, Yasuo, 4,437,008, Cl. 250-396.00R.
Watabe, Akinori; Yonezawa, Susumu; and Tanaka, Yoshiharu, 4,437,177, Cl. 369-45.000.

Nippon Telegraph & Telephone Public Corp. of 1-6: *See*—
Yamashita, Masahide; Oku, Hikaru; and Maruyama, Masato, 4,437,168, Cl. 364-900.000.

Nippondenso Co., Ltd.: *See*—
Nakatsuka, Hirotaka; Mizuno, Toshiaki; Yamazoe, Hisamitsu; and Matsuoka, Hiroki, 4,436,074, Cl. 123-492.000.

Nishi, Genichiro: *See*—
Mochizuki, Taketoshi; Matsuo, Kazuya; Kudo, Mituo; Arai, Akira; Yamada, Junichi; Shono, Keizi; Aoki, Masaaki; Ohmori, Masaichi; and Nishi, Genichiro, 4,435,962, Cl. 62-175.000.

Nishida, Kenji: *See*—
Baba, Kiyokazu; and Nishida, Kenji, 4,436,199, Cl. 198-750.000.

Nishida, Mitsuhiro: *See*—
Yamamoto, Sakuei; and Nishida, Mitsuhiro, 4,437,027, Cl. 310-78.000.

Nishida, Takashi: *See*—
Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Kutaka; Ishigura, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,436,939, Cl. 568-813.000.
Saiki, Atsushi; Iwayanagi, Takao; Nonogaki, Saburo; Nishida, Takashi; and Harada, Seiki, 4,436,583, Cl. 156-659.100.

Nishida, Yoshiaki; Yano, Shunji; and Masuyama, Tadahiro, to Daiwa Can Company, Limited. Method of treating the surface of a metal container. 4,436,594, Cl. 204-33.000.

Nishihama, Hitoshi: *See*—
Yamagata, Ryutaro; Kozuka, Nobuhiko; Nishihama, Hitoshi; Koyama, Shigeo; and Sakai, Kazutada, 4,436,412, Cl. 355-15.000.

Nishihara, Yoshiki; and Miyamoto, Kazumichi, to Victor Company of Japan, Ltd. Method for fabricating an information signal recorded medium of the electrostatic capacity type. 4,436,683, Cl. 264-107.000.

Nishikawa, Kazuo; Sato, Kiyoshi; Ichino, Hiroyuki; and Okura, Keniti, to Pioneer Electronic Corporation. Phono pickup cartridge. 4,437,179, Cl. 369-172.000.

Nishikawa, Masatoshi. Method of manufacturing scissors and scissors. 4,435,901, Cl. 30-254.000.

Nishikawa, Mitsuyo: *See*—
Kurihara, Nobuo; Morooka, Yasuo; Nishikawa, Mitsuyo; Miura, Kiyoshi; and Nagahashi, Yoshitoshi, 4,437,163, Cl. 364-508.000.

Nishikawa, Yasuo; and Takahashi, Hirokuni, to Kyusyu Refractories Co., Ltd. Method for hot repairing the inside of a furnace. 4,436,678, Cl. 264-30.000.
Nishimatsu, Shigeru: *See*—
Okudaira, Sadayuki; Saida, Hiroji; Sakai, Yoshio; Nishimatsu, Shigeru; and Suzuki, Keizo, 4,436,581, Cl. 156-643.000.
Nishimura, Shigeaki: *See*—
Isowa, Yoshikazu; Ohmori, Muncki; Mori, Kaoru; Ichikawa, Tetsuya; Nonaka, Yuji; Kihara, Keiichi; Oyama, Kiyotaka; Satoh, Heijiro; and Nishimura, Shigeaki, 4,436,925, Cl. 560-19.000.
Nishimura, Shozo: *See*—
Akahori, Masaaki; Ohyagi, Takashi; and Nishimura, Shozo, 4,437,095, Cl. 340-825.440.
Nishizako, Shizutaka; Ishii, Isao; and Sakamoto, Yoshiaki, to Mitsubishi Denki Kabushiki Kaisha. Calcined member for arc-extinguishing chambers. 4,436,831, Cl. 501-119.000.
Nishizawa, Jun-ichi; and Shiota, Ikuo, to Budda Hajia Handotai Kenkyu Shinkokai. Oxynitride film and its manufacturing method. 4,436,770, Cl. 427-255.300.
Nissan Motor Co., Ltd.: *See*—
Hayashi, Yoshimasa, 4,436,061, Cl. 123-41.740.
Ichikawa, Mamoru; and Satake, Sachio, 4,436,318, Cl. 280-104.000.
Kato, Yoshiaki, 4,437,162, Cl. 364-442.000.
Kinoshita, Keijiro, 4,435,998, Cl. 74-798.000.
Mochida, Haruo, 4,437,137, Cl. 361-172.000.
Murairshi, Masakazu, 4,436,270, Cl. 248-416.000.
Nakazawa, Shigeo; and Sato, Shintaro, 4,435,973, Cl. 72-327.000.
Shimizu, Tetsuo, 4,436,336, Cl. 296-76.000.
Tanaka, Toshiaki; Ushimura, Shoji; and Etoh, Yukihiro, 4,436,060, Cl. 123-41.100.
Yamaguchi, Noboru; and Satoh, Seiichi, 4,435,881, Cl. 24-16.0PB.
Nissin Kogyo Co., Ltd.: *See*—
Mizusaki, Yoshinobu, 4,437,091, Cl. 340-623.000.
Nitta, Jun: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,436,921, Cl. 544-238.000.
Nitz, Rolf-Eberhard: *See*—
Schonafinger, Karl; Beyerle, Rudi; Bohn, Helmut; Just, Melitta; Martorana, Piero A.; and Nitz, Rolf-Eberhard, 4,436,743, Cl. 424-269.000.
Niwa, Toshio; and Nagashima, Susumu, to Mitsubishi Chemical Industries Limited. Disperse dye composition. 4,436,522, Cl. 8-524.000.
Niwa, Toshio; and Hihara, Toshio, to Mitsubishi Chemical Industries Ltd. Anthraquinone dyes for cellulose-containing fibers and process for producing the same. 4,436,906, Cl. 544-187.000.
NL Industries, Inc.: *See*—
Carnicom, William M., 4,436,636, Cl. 252-8.50P.
Tetenbaum, Marvin T.; and Crowley, Burlon C., 4,436,862, Cl. 524-445.000.
Noji, Takashi; Hapao, Norio; and Obata, Yoshiharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Radiation excited phosphor screen and method for manufacturing the same. 4,437,011, Cl. 250-486.100.
Nolen, Robert L., Jr.: *See*—
Schaap, A. Paul; Busch, George E.; and Nolen, Robert L., Jr., 4,436,715, Cl. 423-579.000.
Noller, Jacques; Ragain, Jacques; and Prevost, Marc, to Societe d'Optique, Precision Electronique et Mechanique, Sopelem. Hoisting and lowering mechanism for a rotatable mast. 4,436,051, Cl. 114-340.000.
Nomura, Isshi: *See*—
Akagi, Motonobu; Nomura, Isshi; Hattori, Kyo; and Kato, Kichiro, 4,436,070, Cl. 123-440.000.
Nomura, Yoshiyuki; Okuda, Kanemasa; and Ishii, Hisao, to Fujitsu Fanuc Limited. Wire-cut, electric discharge machining method. 4,436,975, Cl. 219-69.00W.
Nonaka, Yuji: *See*—
Isowa, Yoshikazu; Ohmori, Muncki; Mori, Kaoru; Ichikawa, Tetsuya; Nonaka, Yuji; Kihara, Keiichi; Oyama, Kiyotaka; Satoh, Heijiro; and Nishimura, Shigeaki, 4,436,925, Cl. 560-19.000.
Nonnenmann, Manfred; and Deuschle, Steffi, to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG. Pneumatic control system, especially for vehicle heating systems. 4,436,245, Cl. 236-49.000.
Nonogaki, Saburo: *See*—
Saiki, Atsushi; Iwayanagi, Takao; Nonogaki, Saburo; Nishida, Takashi; and Harada, Seiki, 4,436,583, Cl. 156-659.100.
Nordson Corporation: *See*—
Jones, Stephen H., 4,437,152, Cl. 364-138.000.
Nordstrom, Eric W.; and Manoski, Laurence A., to Union Special Corporation. Thread wiping device. 4,436,044, Cl. 112-286.000.
Norland Corporation: *See*—
Belt, Kenneth W., 4,436,093, Cl. 128-419.0PG.
Norman, Bill K., to Norman Manufacturing Co., Inc. Fish lure. 4,435,914, Cl. 43-42.120.
Norman Manufacturing Co., Inc.: *See*—
Norman, Bill K., 4,435,914, Cl. 43-42.120.
Normann, Carl N. Spinning reel for fly-fishing. 4,436,254, Cl. 242-84.21R.
Norris, Brian; and Castro, Robert M., to Rohr Industries, Inc. Method of selectively electroplating the nodes of dimpled titanium material. 4,436,592, Cl. 204-15.000.
North American Philips Electric Corp.: *See*—
Larson, Daniel A., 4,437,039, Cl. 315-60.000.
Nosaka, Isao: *See*—
Seimiya, Ryubun; Iwai, Fumio; and Nosaka, Isao, 4,436,402, Cl. 355-3.00R.
Nose, Noriyuki: *See*—
Endo, Kiyonobu; and Nose, Noriyuki, 4,436,398, Cl. 354-476.000.
Notheis, Patrick J.: *See*—
Hotchkiss, Harry W.; Notheis, Patrick J.; and Englebert, Stephen M., 4,436,780, Cl. 428-198.000.
Notoya, Yoshiaki: *See*—
Yuda, Takuo; and Notoya, Yoshiaki, 4,436,273, Cl. 248-549.000.
Novorolsky, Paul G.: *See*—
Hansen, Robert C.; and Novorolsky, Paul G., 4,436,958, Cl. 179-2.00A.
NSK-Warner K.K.: *See*—
Yamamoto, Kazuo, 4,436,323, Cl. 280-804.000.
O. Ames Co.: *See*—
Eads, Harold O.; and Fowler, Ronald R., 4,436,267, Cl. 248-75.000.
Oakland Products, Inc.: *See*—
Picker, Charles W., 4,436,621, Cl. 210-232.000.
Obata, Yoshiharu: *See*—
Noji, Takashi; Hapao, Norio; and Obata, Yoshiharu, 4,437,011, Cl. 250-486.100.
Obenaus, Franz: *See*—
Mrazek, Gustav; and Obenaus, Franz, 4,437,105, Cl. 346-140.00R.
Obligado, Alvaro: *See*—
Vassalotti, Michael; and Obligado, Alvaro, 4,436,694, Cl. 376-310.000.
Obray, Dean C.: *See*—
Cota, Albert O.; and Obray, Dean C., 4,436,176, Cl. 180-287.000.
O'Brien, Steven M., to Sperry Corporation. High speed byte shifter for a bi-directional data bus. 4,437,166, Cl. 364-900.000.
Occidental Chemical Corporation: *See*—
Rader, Charles G.; and Robota, Stephen, 4,436,942, Cl. 570-145.000.
Occidental Research Corporation: *See*—
DiGiacomo, Peter M.; and Dines, Martin B., 4,436,899, Cl. 528-395.000.
Oda, Suchiro: *See*—
Sakamoto, Noboru; Yamashita, Itaru; Wada, Satoshi; Yano, Kenichi; and Oda, Suchiro, 4,436,981, Cl. 219-124.320.
Odaka, Kentaro: *See*—
Sako, Yoichiro; and Odaka, Kentaro, 4,437,185, Cl. 371-39.000.
Ogata, Masahiro; and Sakai, Osamu, to Hitachi, Ltd.; and Hitachi Microcomputer Engineering, Ltd. Semiconductor integrated circuit device. 4,437,135, Cl. 361-91.000.
Ogawa, Masaya: *See*—
Murasaki, Hiroshi; Ogawa, Masaya; Enoguchi, Yuji; and Masui, Mikio, 4,436,406, Cl. 355-3.0SH.
Oguchi, Yutaka: *See*—
Maruhashi, Kenji; Kojima, Ichiro; Oguchi, Yutaka; Endoh, Noboru; and Satoh, Tetsuo, 4,436,663, Cl. 260-245.910.
O'Hanlon, Peter J.; and Walker, Graham, to Beecham Group Limited. Nitrobenzyl monates antibacterial compounds. 4,436,751, Cl. 424-283.000.
Ohe, Etsuo; Sugawara, Katsuo; Tani, Itaro; and Tsukioka, Hideo, to Hitachi, Ltd. Fire-retardant insulating oils. 4,436,654, Cl. 252-574.000.
Ohkawa, Takehisa; and Yoda, Kuniichi, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,436,786, Cl. 428-447.000.
Ohmori, Masaichi: *See*—
Mochizuki, Taketoshi; Matsuo, Kazuya; Kudo, Mituo; Arai, Akira; Yamada, Junichi; Shono, Keizi; Aoki, Masaaki; Ohmori, Masaichi; and Nishi, Genichiro, 4,435,962, Cl. 62-175.000.
Ohmori, Muncki: *See*—
Isowa, Yoshikazu; Ohmori, Muncki; Mori, Kaoru; Ichikawa, Tetsuya; Nonaka, Yuji; Kihara, Keiichi; Oyama, Kiyotaka; Satoh, Heijiro; and Nishimura, Shigeaki, 4,436,925, Cl. 560-19.000.
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, to Mochida Pharmaceutical Co., Ltd. Method of producing γ-globulin for intravenous injection and therapeutic agent produced thereby. 4,436,724, Cl. 424-101.000.
Ohta, Masafumi; and Sakai, Kiyoshi, to Ricoh Co., Ltd. Multilayer electrophotographic element containing a trisazo charge carrier generating substance and a hydrazone charge carrier transfer substance. 4,436,800, Cl. 430-59.000.
Ohtsuka, Keizou: *See*—
Narato, Kiyoshi; Ohtsuka, Keizou; Inada, Tooru; and Watanabe, Takashi, 4,436,699, Cl. 422-68.000.
Ohtsuka, Shuichi; and Aotsuka, Yasuo, to Fuji Photo Film Co., Ltd. Reversal electrophotography developing method. 4,436,802, Cl. 430-100.000.
Ohuchi, Kutaka: *See*—
Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Kutaka; Ishigura, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,436,939, Cl. 568-813.000.
Ohyagi, Takashi: *See*—
Akahori, Masaaki; Ohyagi, Takashi; and Nishimura, Shozo, 4,437,095, Cl. 340-825.440.
Ohyama, Sadahiro; Kato, Hiroshi; Yaguchi, Sadao; Baba, Mikito; and Okada, Morikazu, to Mitsumi Electric Co. Ltd. Printed circuit device. 4,437,140, Cl. 361-402.000.
Oka, Tateki, to Minolta Camera Kabushiki Kaisha. Magnetic brush developing apparatus. 4,436,413, Cl. 355-15.000.
Okabayashi, Mitcheo: *See*—
Jardin, Stephen C.; Yamada, Masaaki; Furth, Harold P.; and Okabayashi, Mitcheo, 4,436,691, Cl. 376-137.000.
Okabe, Sigeru: *See*—
Takeuchi, Masato; Okada, Hideo; Tobita, Hirosi; Okabe, Sigeru; Matsuda, Shinpei; Tonami, Munehiko; Tamura, Kohki; and Nakajima, Fumito, 4,436,794, Cl. 429-40.000.

Okada, Hideo: *See*—
Takeuchi, Masato; Okada, Hideo; Tobita, Hirosi; Okabe, Sigeru; Matsuda, Shinpei; Tonami, Munehiko; Tamura, Kohki; and Nakajima, Fumito, 4,436,794, Cl. 429-40.000.

Okada, Morikazu: *See*—
Ohyama, Sadahiro; Kato, Hiroshi; Yaguchi, Sadao; Baba, Mikito; and Okada, Morikazu, 4,437,140, Cl. 361-402.000.

Okada, Yoshio; Suzuki, Yoshiaki; Murakami, Ryohei; and Segawa, Yoshiaki, to Matsushita Electric Industrial Co., Ltd. Kitchen furnishings. 4,436,352, Cl. 312-228.000.

Okamoto, Ichiro; and Toga, Yuzo, to Daicel Chemical Industries, Ltd. Polyester copolymer. 4,436,896, Cl. 156-332.000.

Oku, Hikaru: *See*—
Yamashita, Masahide; Oku, Hikaru; and Maruyama, Masato, 4,437,168, Cl. 364-900.000.

Okuda, Kanemasa: *See*—
Nomura, Yoshiyuki; Okuda, Kanemasa; and Ishii, Hisao, 4,436,975, Cl. 219-69.00W.

Okudaira, Sadayuki; Saida, Hiroji; Sakai, Yoshio; Nishimatsu, Shigeru; and Suzuki, Keizo, to Hitachi, Ltd. Uniform etching of silicon (doped and undoped) utilizing ions. 4,436,581, Cl. 156-643.000.

Okumura Corporation: *See*—
Masuda, Masakazu; and Matsumoto, Hironori, 4,436,167, Cl. 175-72.000.

Okumura, Fumio; Higuchi, Masahiro; Kamei, Shun; and Miyauchi, Masahiro, to Mitsubishi Paper Mills, Ltd. Thermosensitive recording material. 4,436,783, Cl. 428-411.000.

Okumura, Masahide: *See*—
Matsuda, Tadahito; Okumura, Masahide; Yokouchi, Hisatake; Ozasa, Susumu; and Kato, Yasuo, 4,437,008, Cl. 250-396.00R.

Okumura, Takeo: *See*—
Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, 4,436,722, Cl. 424-70.000.

Okura, Keniti: *See*—
Nishikawa, Kazuo; Sato, Kiyoshi; Ichino, Hiroyuki; and Okura, Keniti, 4,437,179, Cl. 369-172.000.

Okuyama, Shigeaki; Nakamura, Norimi; and Hashimoto, Osami, to Kubota, Ltd. Machine body inclination detector device. 4,435,907, Cl. 33-366.000.

Olbrich, Hazel C.; O'Rear, Dennis J.; and Zakarian, John A., to Chevron Research Company. Process for dewaxing and desulfurizing oils. 4,436,614, Cl. 208-89.000.

Olderaan, Wilhelmus F. T. C., to Wavin B.V. Apparatus for installing a sealing ring. 4,435,888, Cl. 29-235.000.

Olmsted, Gaylord S.; and Rosno, Gordon W., to Westinghouse Electric Corp. Variable energy missile eject system. 4,436,016, Cl. 89-1.809.

Olschewski, Armin; Brandenstein, Manfred; and Kunkel, Heinrich, to SKF Kugellagerfabriken GmbH. Cylindrical roller bearing support for trunnions in fork eyes of universal joints. 4,436,516, Cl. 464-128.000.

Olschewski, Armin: *See*—
Ernst, Horst M.; Brandenstein, Manfred; Walter, Lothar; and Olschewski, Armin, 4,435,890, Cl. 29-148.40R.

Olsen, John H.: *See*—
Mercer, John E.; Olsen, John H.; and Elkins, Stephen, 4,435,902, Cl. 30-296.00R.

Olson, Donald C., to Shell Oil Company. Method of removing hydrogen sulfide from gases utilizing a polyvalent metal chelate solution and regenerating the solution in a fuel cell. 4,436,711, Cl. 423-573.00G.

Olson, Donald C., to Shell Oil Company. Method of removing hydrogen sulfide from gases utilizing a polyvalent metal chelate of nitrilotriacetic acid and electrolytically regenerating the solution. 4,436,712, Cl. 423-573.00G.

Olson, Donald C., to Shell Oil Company. Method of removing hydrogen sulfide from gases utilizing a polyvalent metal chelate of nitrilotriacetic acid and regenerating the solution in a fuel cell. 4,436,713, Cl. 423-573.00G.

Olson, Donald C., to Shell Oil Company. Method of removing hydrogen sulfide from gases utilizing a polyvalent metal chelate of nitrilotriacetic acid and electrolytically regenerating the solution. 4,436,714, Cl. 423-573.00G.

Olson, George E., to A. O. Smith Harvestore Products, Inc. Drive mechanism for a rotatable sweep arm. 4,436,473, Cl. 414-310.000.

Olympus Optical Co., Ltd.: *See*—
Ikari, Kazuo; and Fujii, Toru, 4,436,382, Cl. 350-458.000.
Maeda, Haruo, 4,436,383, Cl. 350-469.000.
Osanai, Akira, 4,436,257, Cl. 242-201.000.
Saitou, Sinichi, 4,436,256, Cl. 242-200.000.
Taira, Akio, 4,436,384, Cl. 350-515.000.
Tamagawa, Akira, 4,436,827, Cl. 436-534.000.

Omae, Takashi; Tanaka, Kisaburoo; Aoki, Masahiro; Hirayama, Fumitoshi; and Izaki, Susumu, to Mitsubishi Jukogyo Kabushiki Kaisha. High strength and high toughness welding material. 4,436,554, Cl. 75-128.00T.

Omron Tateisi Electronics Co.: *See*—
Bando, Yoshihide; Tanaka, Toshiki; Honda, Sueaki; Takahashi, Yoshihiko; Tsuruyoshi, Kenichi; Kawashima, Katsumi; and Kishimoto, Syuichi, 4,437,078, Cl. 335-81.000.

O'Neill, Terence C., to Internationale Octrooi Maatschappij "Octropa" B.V. Miter block. 4,436,014, Cl. 83-762.000.

O'Neill, William J., to Argon Medical Corp. Removable hemostasis valve. 4,436,519, Cl. 604-175.000.

Ong, Helen H.; and Profitt, James A., to Hoechst-Roussel Pharmaceuticals Inc. Benzo[b]thiophenes. 4,436,748, Cl. 424-275.000.

Onoda Chemical Industry Co., Ltd.: *See*—
Miyazaki, Naomi; and Fujimura, Akira, 4,436,710, Cl. 423-552.000.

Onodera, Osamu, to Hitachi, Ltd. Overflow detection for a decimal arithmetic unit. 4,437,165, Cl. 364-749.000.

Onoue, Keiji: *See*—
Seiki, Kazuo; Motobayashi, Kozo; Yoshizawa, Toshio; Yoshida, Yoshiaki; and Onoue, Keiji, 4,435,954, Cl. 57-408.000.

Ophoff, Paul-Arthur; and Weinel, Johann, to Siemens Aktiengesellschaft. Nondispersive infrared gas analyzer. 4,437,005, Cl. 250-343.000.

Opitz, Dieter: *See*—
Burkle, Wolfgang; and Opitz, Dieter, 4,436,252, Cl. 242-72.00B.

Oppenlaender, Knut; Stork, Karl; and Barthold, Klaus, to BASF Aktiengesellschaft. Ammonium salts of polymaleic acids and use as corrosion inhibitors in water-in-oil emulsions. 4,436,639, Cl. 252-8.55E.

Optimax III, Inc.: *See*—
Bukowski, William A., 4,436,369, Cl. 350-130.000.

O'Rear, Dennis J.: *See*—
Olbrich, Hazel C.; O'Rear, Dennis J.; and Zakarian, John A., 4,436,614, Cl. 208-89.000.

Orsinger, Winston A., to Bell & Howell Company. Sheet feeding device. 4,436,299, Cl. 271-100.000.

Ortho Diagnostic Systems, Inc.: *See*—
Bishop, David C., 4,436,824, Cl. 436-514.000.
Graham, Henry A., Jr.; Hawk, Johnna B.; and Chachowski, Rosemary K., 4,436,631, Cl. 210-772.000.

Orum, Paul R.: *See*—
Bonds, James V.; and Orum, Paul R., 4,436,279, Cl. 251-86.000.

Osaka, Susumu; and Toda, Minoru, to RCA Corporation. Shutter construction. 4,435,920, Cl. 49-82.000.

Osako, Kyoichi: *See*—
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Osanai, Akira, to Olympus Optical Co., Ltd. Reel driving method for tape recorder and a driving mechanism for its practice. 4,436,257, Cl. 242-201.000.

Osborne, Jeffrey C.: *See*—
Christopher, Chris J.; Wenninger, Fred W.; Morris, Donald E.; Covington, Wayne F.; Folsom, Jerry B.; Beyers, Joseph W.; Nairn, John H.; and Osborne, Jeffrey C., 4,437,156, Cl. 364-200.000.

Osborne, John R.; and Bischoff, Peter G., to Memorex Corporation. Self-aligned pole tips. 4,436,593, Cl. 204-15.000.

Ose, Earl E., to Eli Lilly and Company. Control of swine dysentery. 4,426,734, Cl. 424-181.000.

Osterberg, Thomas V., to A-Betong AB. Arrangement for hydroelectric power plants. 4,437,017, Cl. 290-52.000.

Osterholm, Robert J.: *See*—
Boodman, Norman S.; Farr, Elvin L.; Osterholm, Robert J.; and Green, Neulan B., III, 4,436,615, Cl. 208-177.000.

Ostlie, Arne M.: *See*—
Strandli, Kaare R.; and Ostlie, Arne M., 4,435,887, Cl. 29-123.000.

Ostroff, Arthur: *See*—
Tullos, Robert N.; and Ostroff, Arthur, 4,437,049, Cl. 318-696.000.

Otis Engineering Corporation: *See*—
Barker, James M., 4,436,150, Cl. 166-31.000.
Fisher, Ernest P., Jr.; and Welch, William R., 4,436,152, Cl. 166-214.000.

Otsuka, Tsuneo: *See*—
Inoue, Kazuo; and Otsuka, Tsuneo, 4,436,172, Cl. 180-219.000.

Otto Tuchenhagen GmbH & Co. KG: *See*—
Tuchenhagen, Otto A. P.; Mieth, Hans O. E.; and Coura, Herbert R., 4,436,106, Cl. 137-240.000.

Ouchi, Teruo, to Kabushiki Kaisha Medos Kenkyusho. Bioptic instrument. 4,436,087, Cl. 128-6.000.

Outboard Marine Corporation: *See*—
Heismann, Richard A., 4,435,949, Cl. 56-320.200.

Overton, William C., Jr.; and Steyert, William A., Jr., to United States of America, Energy. Apparatus for detecting a magnetic anomaly contiguous to remote location by squid gradiometer and magnetometer systems. 4,437,064, Cl. 324-346.000.

Overzet, John K., to Borg-Warner Corporation. Stabilizing circuit for controlled inverter-motor system. 4,437,050, Cl. 318-798.000.

Owen, Daniel V.: *See*—
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Owens-Corning Fiberglas Corporation: *See*—
Grossi, Anthony V.; Hahn, Louis T.; Marzocchi, Alfred; and Bolen, Charles E., 4,436,767, Cl. 427-138.000.
Grossi, Anthony V.; Hagelee, Leon A.; Hahn, Louis T.; and Marzocchi, Alfred, 4,436,864, Cl. 524-458.000.
Haines, Richard M.; Wong, Robert; and Berger, Elisabeth J., 4,436,848, Cl. 523-426.000.
Jackson, Robert R.; and Klink, Jerome P., 4,436,258, Cl. 242-18.00G.
Pellegrin, Michael T.; Hanna, Terry J.; and Thompson, Thomas K., 4,436,541, Cl. 65-2.000.

Owens-Illinois, Inc.: *See*—
Chang, Long F., 4,436,216, Cl. 220-69.000.
Juvinall, John W., 4,437,116, Cl. 358-106.000.

Oyama, Kiyotaka: *See*—
Isowa, Yoshikazu; Ohmori, Muncki; Mori, Kaoru; Ichikawa, Tetsuya; Nonaka, Yuji; Kihara, Keiichi; Oyama, Kiyotaka; Satoh, Heijiro; and Nishimura, Shigeaki, 4,436,925, Cl. 560-19.000.

Oyekan, Soni O.; and Swan, George A., to Exxon Research and Engineering Co. Catalytic reforming process. 4,436,612, Cl. 208-65.000.

Ozaki, Nobuo; and Kaneko, Yoshimasa, to Maeda Industries, Ltd. Ball head lock nut as a component element of bicycle head parts. 4,436,468, Cl. 411-248.000.
Ozasa, Susumu: *See—*
Matsuda, Tadahito; Okumura, Masahide; Yokouchi, Hisatake; Ozasa, Susumu; and Kato, Yasuo, 4,437,008, Cl. 250-396.00R.
Ozawa, Yukio: *See—*
Tamama, Hiroshi; Ozawa, Yukio; Miyazaki, Jingo; Ito, Hiroshi; and Kinoshita, Toyohiro, 4,436,313, Cl. 277-80.000.
Pacey, Gilbert E.; and Bubnis, Benard P., to President and Trustees of the Miami University, The. Trifluoromethyl-substituted chromogenic crown ethers and methods of using same. 4,436,923, Cl. 549-352.000.
Pache, Norbert; and Mazac, Karel, to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft. Electric arc welding apparatus. 4,436,980, Cl. 219-123.000.
Pacific Electro Dynamics, Inc.: *See—*
Carpenter, Ralph F., 4,437,146, Cl. 363-21.000.
Padalka, Valentin G.: *See—*
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; and Sinelschikov, Andrei K., 4,436,830, Cl. 501-96.000.
Pagels, Louis T.: *See—*
Weiler, Gerhard H.; and Pagels, Louis T., 4,436,210, Cl. 215-32.000.
Pakhomov, Gennady N.; Lutte, Anita Y.; Kadnikova, Galina I.; and Kolesnik, Anatoly G. Granulated treatment-and-prophylactic dental preparation possessing anticarious effect. 4,436,720, Cl. 424-44.000.
Pako Corporation: *See—*
Strunc, Gerald R., 4,436,008, Cl. 83-42.000.
Pall Corporation: *See—*
Abrams, Howard; and Allen, Barrington T., 4,436,635, Cl. 210-806.000.
Panavision, Incorporated: *See—*
Gottschalk, Robert E., 4,437,126, Cl. 358-224.000.
Panicker, Narayana N.: *See—*
Gentry, Larry L.; Moss, Herbert H.; Panicker, Narayana N.; and Wada, William T., 4,436,048, Cl. 114-230.000.
Panik, Ferdinand: *See—*
Mehren, Herbert; and Panik, Ferdinand, 4,436,170, Cl. 180-131.000.
Pannu, Jaswant S. Universal intraocular lens and a method of measuring an eye chamber size. 4,435,855, Cl. 3-13.000.
Papakube Corporation: *See—*
Nelson, Garth C.; White, Henry J.; and Nelson, Gerald B., 4,436,502, Cl. 425-331.000.
Parello, Joseph: *See—*
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,436,874, Cl. 525-327.100.
Parker, James: *See—*
Cooper, Michael J.; and Parker, James, 4,436,795, Cl. 429-53.000.
Parks-Cramer Company: *See—*
Mulligan, William L., 4,435,876, Cl. 15-312.00R.
Parman, David G.: *See—*
Weitzel, Harold B.; and Parman, David G., 4,436,565, Cl. 156-49.000.
Paronetto, Lanfranco: *See—*
Perdomini, Luciano; Tonon, Elia; and Paronetto, Lanfranco, 4,436,755, Cl. 426-15.000.
Parrillo, Louis C.; Reutlinger, George W.; and Wang, Li-Kong, to Bell Telephone Laboratories, Incorporated. Process for forming complementary integrated circuit devices. 4,435,895, Cl. 29-571.000.
Parrillo, Louis C.; and Payne, Richard S., to Bell Telephone Laboratories, Incorporated. Method for fabricating complementary field effect transistor devices. 4,435,896, Cl. 29-571.000.
Paschke, Werner: *See—*
Hafner, Udo; Herth, Harro; Kienzle, Wolfgang; Knapp, Heinrich; Krauss, Rudolf; Lembke, Manfred; Paschke, Werner; and Sauer, Rudolf, 4,436,071, Cl. 123-472.000.
Passaro, Robert E.; and Burough, Irvin G., to Andros Analyzers Incorporated. Modular gas analyzer. 4,437,004, Cl. 250-343.000.
Patel, Bhupendra P.: *See—*
Prusak, John J.; and Patel, Bhupendra P., 4,436,603, Cl. 204-194.000.
Paterson Products Limited: *See—*
Taylor, Eric, 4,436,401, Cl. 354-312.000.
Patoiseau, Jean-Francois: *See—*
Hatinguais, Philippe; Patoiseau, Jean-Francois; and Marcelon, Gilbert, 4,436,749, Cl. 424-278.000.
Paul, Fred R., Jr.; and Mrozinski, James S., to Minnesota Mining and Manufacturing Co. Container having tamper evident seal and imaged polymer film useful as such a seal. 4,436,213, Cl. 215-365.000.
Paul Wurth S.A.: *See—*
Schmidt, Paul; and Legille, Edouard, 4,436,293, Cl. 266-276.000.
Pavlov, Alexei A.: *See—*
Shevakin, Jury F.; Dobkin, Igor I.; Donskoi, Efim M.; Manov, Grigory L.; Zhdanov, Vasily V.; Berger, Elena S.; Popov, Valery M.; Pavlov, Alexei A.; and Akchurin, Rashid Z., 4,435,886, Cl. 29-33.00D.
Payne, Richard S.: *See—*
Parrillo, Louis C.; and Payne, Richard S., 4,435,896, Cl. 29-571.000.
Payseur, John Y.: *See—*
Cottrell, Jennie L.; Davis, Richard A.; Harris, Susan K.; Jones, Bernard R.; and Payseur, John Y., 4,436,963, Cl. 179-18.00B.
Peaster, Bertram A., to Lockheed Corporation. Flexible coupling for fluid ducts. 4,436,326, Cl. 285-178.000.
PEC Process Engineering Company: *See—*
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Pellegrin, Michael T.; Hanna, Terry J.; and Thompson, Thomas K., to Owens-Corning Fiberglas Corporation. Method for production of mineral fibers. 4,436,541, Cl. 65-2.000.
Pennsylvania Engineering Corporation: *See—*
Nagati, Rashed N., 4,436,291, Cl. 266-246.000.
Pennwalt Corporation: *See—*
Lindaberry, Harold L., 4,436,719, Cl. 424-37.000.
Perdomini, Luciano; Tonon, Elia; and Paronetto, Lanfranco, to Montedison S.p.A.; and Chimici Perdomini S.p.A. Separation of fruit juice with fibers of an olefin polymer. 4,436,755, Cl. 426-15.000.
Perfil En Frio, S.A. (PERFRISA): *See—*
Larrea, D. Juan, 4,435,935, Cl. 52-461.000.
Perkins, Haywood A.: *See—*
Barczak, Virgil J.; Perkins, Haywood A.; and Daigle, O. L., 4,436,681, Cl. 264-67.000.
Perrey, Hermann: *See—*
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Gauthier-Lafaye, Jean; and Perron, Robert, 4,436,889, Cl. 562-519.000.
Perry, William E. Automobile hand control. 4,436,191, Cl. 192-3.00S.
Persson, Bengt A. Ventilation valve. 4,436,107, Cl. 137-314.000.
Perz, John S.: *See—*
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Peters, Richard K.: *See—*
Long, Robert C.; and Peters, Richard K., 4,436,574, Cl. 156-415.000.
Peterson, Daniel G.; and Erickson, John W., to Kobe, Inc. Surface power unit for a downhole pump. 4,436,492, Cl. 417-386.000.
Peterson, Kenneth S.: *See—*
Ramachandran, Pallassana N.; and Peterson, Kenneth S., 4,436,637, Cl. 252-8.700.
Peterson Manufacturing Co.: *See—*
Templeman, Arthur R., 4,436,445, Cl. 403-189.000.
Petr, David W., to Bell Telephone Laboratories, Incorporated. Adaptive differential PCM coding. 4,437,087, Cl. 340-347.0DD.
Petretti, Anthony V., to Metro Hoist & Body Co., Inc. Eductor truck. 4,436,622, Cl. 210-232.000.
Petrov, Lev N.; Adoniev, Viktor A.; and Kononov, Valery I. Method of sorting semiconductor devices and apparatus for performing this method. 4,436,619, Cl. 209-573.000.
Petrovic, Vladan; and Rotthaus, Heinz, to Krupp-Koppers GmbH. Method of pretreating coal for coking plant. 4,436,589, Cl. 201-41.000.
Peyrouset, Andre; and Spring, Francois, to Societe Nationale Elf Aquitaine. Process of extraction of lactoferrine and immunoglobulins of milk. 4,436,658, Cl. 260-122.000.
Pfaendler, Hans R., to Ciba-Geigy Corporation. 3-Substituted bicyclic azetidinone derivatives. 4,436,661, Cl. 260-245.300.
Pfannschmidt, Martin, to SMS Schloemann-Siemag AG. System for the treatment of a continuous metal web. 4,436,292, Cl. 266-107.000.
Pfefferle, Dietmar: *See—*
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Pfizer Inc.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,436,747, Cl. 424-274.000.
Pfleiderer, Ernst: *See—*
Kreuzburg, Eberhard; Von Der Pahle, Dietrich J.; Monsheimer, Rolf; Pfleiderer, Ernst; and Taeger, Tilman, 4,436,624, Cl. 210-632.000.
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Phillips Petroleum Company: *See—*
Beever, William H., 4,436,865, Cl. 524-504.000.
Bobsein, Rex L., 4,436,948, Cl. 585-532.000.
Myers, John W.; and Strope, Daniel J., 4,436,949, Cl. 585-664.000.
Sherk, Fred T., 4,436,901, Cl. 528-498.000.
Stacy, Galen D.; and Likins, Merle R., Jr., 4,436,698, Cl. 422-62.000.
Witt, Donald R., 4,436,882, Cl. 526-106.000.
Witt, Donald R., 4,436,883, Cl. 526-106.000.
Wood, William E.; and Barber, Franklin T., 4,436,902, Cl. 528-501.000.
Piazzetta, Domenico. Fireplace for heating indoor spaces and water for sanitary use. 4,436,079, Cl. 126-121.000.
Picart, Francois, to Societe de Recherches Industrielles. Pyranoindoles. 4,436,915, Cl. 548-432.000.
Picker, Charles W., to Oakland Products, Inc. Pressure vessel having a plurality of filtering elements. 4,436,621, Cl. 210-232.000.
Pickering & Company, Inc.: *See—*
Chass, Jacob, 4,437,019, Cl. 307-83.000.
Picquendar, Jean E., to Thomson-CSF. FSK Demodulator for frequency-modulation modem. 4,437,068, Cl. 329-105.000.
Pierce Chemical Company: *See—*
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Pierre Fabre S.A.: *See—*
Hatinguais, Philippe; Patoiseau, Jean-Francois; and Marcelon, Gilbert, 4,436,749, Cl. 424-278.000.
Pierrel, Michel: *See—*
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Pierret, Robert F.: *See*—
Gunshor, Robert L.; Pierret, Robert F.; and Melloch, Michael R., 4,437,031, Cl. 310-313.00B.

Pierro, Joseph J., Jr., to American Standard Inc. Cab signal test set for automatically testing the pickup coils and checking an amplifier of cab signal equipment. 4,437,056, Cl. 324-73.0AT.

Pietsch, Hartmut: *See*—
Krennrich, Otmar; Brendel, Gottfried; and Pietsch, Hartmut, 4,436,704, Cl. 423-11.000.

Pijpers, Jacques P. L.: *See*—
Smith, Paul; Lemstra, Pieter J.; Kirschbaum, Robert; and Pijpers, Jacques P. L., 4,436,689, Cl. 264-204.000.

Pimenov, Mikhail G.: *See*—
Vichkanova, Serafima A.; Shipulina, Ljudmila D.; Glyzin, Vladimir I.; Bankovsky, Alexandr I.; Pimenov, Mikhail G.; and Boryaev, Klim I., 4,436,732, Cl. 424-180.000.

Pioneer Electronic Corporation: *See*—
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Pirson, Ewald; Schmidlkofer, Jakob; and Innertsberger, Ernst, to Wacker-Chemie GmbH. Self-emulsifiable antifoams. 4,436,647, Cl. 252-358.000.

Pissiotas, Georg: *See*—
Berrer, Dagmar; Pissiotas, Georg; and Rohr, Otto, 4,436,935, Cl. 564-49.000.

Pitel, Ira J., to Cornell-Dubilier Electric Corporation. Lighting control for high intensity discharge lamp. 4,437,043, Cl. 315-308.000.

Piteo, Michael J., to R. E. Phelon Company, Inc. Electronic speed control for capacitor discharge ignition system. 4,436,076, Cl. 123-602.000.

Pitman-Moore, Inc.: *See*—
Dinka, Stephen K., 4,436,816, Cl. 435-240.000.

Pitts, Loren: *See*—
Shahan, James E.; and Pitts, Loren, 4,436,119, Cl. 138-149.000.

Plasticisers Limited: *See*—
Slack, Ian D.; Ellis, David G.; and Firth, Colin, 4,436,564, Cl. 156-42.000.

Plessey Overseas Limited: *See*—
Crisp, Malcolm; and Lewis, Christopher, 4,436,196, Cl. 194-100.00A.

Plym, Oscar W. Traffic safe pole. 4,435,930, Cl. 52-98.000.

Pohl, Hans H.: *See*—
Weitz, Hans-Martin; Fischer, Rolf; and Pohl, Hans H., 4,436,944, Cl. 585-408.000.

Pointer, Simon P. Tires for wheels. 4,436,128, Cl. 152-209.00R.

Poisson, Leandre. Integrated window and thermal shutter assembly. 4,435,919, Cl. 49-63.000.

Polis, Marjorie J.: *See*—
Ludwig, Richard H.; Quan, Wing C.; Husson, Alan L.; Dirnberger, Linus R.; and Polis, Marjorie J., 4,436,185, Cl. 187-29.00R.

Pollmann, Kurt: *See*—
Miersch, Eddehard F.; Pollmann, Kurt; Schettler, Helmut; and Zuhlke, Rainer, 4,437,022, Cl. 307-270.000.

Polymer Technology Corporation: *See*—
Ellis, Edward J.; and Salamone, Joseph C., 4,436,730, Cl. 424-180.000.

Polyplastics Co., Ltd.: *See*—
Kasuga, Takuzo; Takahashi, Katsuhiko; and Nakashima, Tuneyasu, 4,436,877, Cl. 525-437.000.

Pomerene, James H.; and Rechtschaffen, Rudolph N., to International Business Machines Corporation. Cache memory architecture with decoding. 4,437,149, Cl. 364-200.000.

Pomplun, William S.; and Grube, Herbert E., to Kimberly-Clark Corporation. Creping adhesives containing poly 2-ethyl-2-oxazoline. 4,436,867, Cl. 524-503.000.

Poncelet, Georges: *See*—
Jacobs, Pierre; Poncelet, Georges; and Schutz, Alain, 4,436,832, Cl. 502-84.000.

Pont-A-Mousson S.A.: *See*—
Fuminier, Claude; and Pierrel, Michel, 4,435,894, Cl. 29-527.500.

Pool, James L., to Lisle Corporation. Battery post and terminal cleaner. 4,435,873, Cl. 15-105.000.

Popov, Valery M.: *See*—
Shevakin, Jury F.; Dobkin, Igor I.; Donskoi, Efim M.; Manov, Grigory L.; Zhdanov, Vasily V.; Berger, Elena S.; Popov, Valery M.; Pavlov, Alexei A.; and Akchurin, Rashid Z., 4,435,886, Cl. 29-33.00D.

Potter, John K.: *See*—
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Powell, Thomas A., to Ex-Cell-O Corporation. Automatic depth compensating system. 4,436,460, Cl. 408-14.000.

PPG Industries, Inc.: *See*—
Girgis, Mikhail M., 4,436,866, Cl. 524-510.000.
Wagner, Melvin P., 4,436,847, Cl. 523-203.000.

Precision Plastic Products Corp.: *See*—
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Precoul, Michel, to Societe d'Etudes, de Realisations et d'Applications Techniques (SERAT). Hollow charges with plural conical configurations. 4,436,033, Cl. 102-307.000.

Predali, Jean-Jacques: *See*—
Dufour, Philippe; Predali, Jean-Jacques; Ranchin, Guy, deceased; Ranchin, Marc, legal heir; and Ranchin, Genevieve, legal heir, 4,436,616, Cl. 209-3.000.

President and Trustees of the Miami University, The: *See*—
Pacey, Gilbert E.; and Bubnis, Benard P., 4,436,923, Cl. 549-352.000.

Pressure Products Company: *See*—
Meginnis, Charles E., deceased, 4,436,375, Cl. 350-319.000.

Prevost, Marc: *See*—
Nollez, Jacques; Ragain, Jacques; and Prevost, Marc, 4,436,051, Cl. 114-340.000.

Priebe, Edmund: *See*—
Brandstetter, Franz; Muench, Volker; Naarmann, Herbert; and Priebe, Edmund, 4,436,854, Cl. 524-139.000.

Priepke, Edward H.: *See*—
Lindblom, Curtis H.; Lausch, H. Nevin; and Priepke, Edward H., 4,436,248, Cl. 241-101.700.

Prinz, Bruno; Rockel, Manfred B.; Rudolph, Gunther; Heubner, Ulrich; and Zoebe, Hugo, to Vereinigte Deutsch Metallwerke AG. Gold-colored coin material. 4,436,790, Cl. 428-675.000.

Procter & Gamble Company, The: *See*—
Dirksing, Robert S.; and Barker, Dale E., 4,436,269, Cl. 248-214.000.
Jacobson, Ronald L.; and Hanley, Dean C., 4,436,653, Cl. 252-547.000.

Profet, Gary A., to General DataComm Industries, Inc. Method and apparatus for distributing control signals. 4,437,183, Cl. 370-110.100.

Profet, Gary A.: *See*—
Lambert, David A.; and Profet, Gary A., 4,437,182, Cl. 370-110.100.

Profitt, James A.: *See*—
Ong, Helen H.; and Profitt, James A., 4,436,748, Cl. 424-275.000.

Prokop, Jon S., to Texas Instruments Incorporated. High terminal count integrated circuit device package. 4,437,141, Cl. 361-403.000.

Proud, Joseph M.: *See*—
Lapatovich, Walter P.; Proud, Joseph M.; and Riseberg, Leslie A., 4,436,762, Cl. 427-39.000.

Prusak, John J., to RCA Corporation. Apparatus for grinding the back surfaces of record molding stampers. 4,435,922, Cl. 51-58.000.

Prusak, John J.; and Patel, Bhupendra P., to RCA Corporation. Apparatus for separating a replica from a matrix. 4,436,603, Cl. 204-194.000.

Puestel, Hubert: *See*—
Schulz, Rudi; Puestel, Hubert; Weber, Georg; and Kuerten, Heribert, 4,436,702, Cl. 422-195.000.

Purdue Research Foundation: *See*—
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Gunshor, Robert L.; Pierret, Robert F.; and Melloch, Michael R., 4,437,031, Cl. 310-313.00B.

Purification Engineering, Inc.: *See*—
Wood, Louis L.; and Calton, Gary J., 4,436,813, Cl. 435-109.000.

Purvis, Fay A.; Bennett, Robert W.; and Ruth, Roger A., to Enterra Corporation. Foam liquid concentrate supply system. 4,436,487, Cl. 417-46.000.

Puzzle Specialties: *See*—
Caldwell, T. Francis, 4,436,307, Cl. 273-157.00R.

Quan, Wing C.: *See*—
Ludwig, Richard H.; Quan, Wing C.; Husson, Alan L.; Dirnberger, Linus R.; and Polis, Marjorie J., 4,436,185, Cl. 187-29.00R.

Queener, Carl A., to International Business Machines Corporation. File compaction apparatus and method for copiers. 4,436,409, Cl. 355-14.00R.

R. E. Phelon Company, Inc.: *See*—
Piteo, Michael J., 4,436,076, Cl. 123-602.000.

R & G Sloane Mfg. Co., Inc.: *See*—
Blumenkranz, James J., 4,436,988, Cl. 219-544.000.

Raasch, Hans: *See*—
Schmid, Friedbert; and Raasch, Hans, 4,435,953, Cl. 57-408.000.

Rabe, Thomas L.: *See*—
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Racon Incorporated: *See*—
Stelz, Dale E.; Carroll, Frank I.; and Whaley, Wilson M., 4,436,641, Cl. 252-68.000.

Rader, Charles G.; and Robota, Stephen, to Occidental Chemical Corporation. Process for the catalyzed fluorination of haloalkyl aromatic compounds. 4,436,942, Cl. 570-145.000.

Radford, Kenneth C.; and Harrison, Don E., to Westinghouse Electric Corp. Nuclear fuel fabrication process. 4,436,677, Cl. 264-0.500.

Radio Engineering Service, Inc.: *See*—
Kitrell, John V., 4,436,351, Cl. 312-223.000.

Raftopoulos, Demetrios D., to University of Toledo, The. Instrument for measuring the range of motion associated with a human body joint. 4,436,099, Cl. 128-782.000.

Ragaillier, Franz. Sprayer. 4,436,160, Cl. 169-74.000.

Ragain, Jacques: *See*—
Nollez, Jacques; Ragain, Jacques; and Prevost, Marc, 4,436,051, Cl. 114-340.000.

Ragland, Frank R., Jr., to RCA Corporation. Cathode-ray tube having a temperature compensated mask-frame assembly. 4,437,036, Cl. 313-402.000.

Rallapali, Krishna: *See*—
Alfke, Peter H.; Rallapali, Krishna; and MacMillan, David, 4,437,158, Cl. 364-200.000.

Ralston, Paul H.; and Whitney, Sandra L., to Calgon Corporation. Polyphosphoric acid as a scale and corrosion inhibitor. 4,436,628, Cl. 210-697.000.

Ramachandran, Pallassana N.; and Peterson, Kenneth S., to Colgate-Palmolive Company. Fabric softening heavy duty liquid detergent containing a mixture of water insoluble soap and clay. 4,436,637, Cl. 252-8.700.

Rammler, Roland; and Bussmann, Alfons, to Metallgesellschaft Aktiengesellschaft. Process for devolatilizing devolatilizable fine-grained material by means of hot, fine-grained heat-carrying material. 4,436,588, Cl. 201-12.000.

Ranchin, Genevieve, legal heir: *See*—
Dufour, Philippe; Predali, Jean-Jacques; Ranchin, Guy, deceased; Ranchin, Marc, legal heir; and Ranchin, Genevieve, legal heir, 4,436,616, Cl. 209-3.000.

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Randall, Charles E.: *See*—
Dorman, John G.; Balbo, Anthony M.; Randall, Charles E.; and Sette, Robert A., 4,436,184, Cl. 187-29.00R.

Rank Organisation Limited, The: *See*—
Bertenshaw, David R.; Lockwood, Edwin P.; and Brown, Anthony R., 4,437,169, Cl. 364-900.000.

Rapp, Ronald J.: *See*—
Burdick, Patricia E.; and Rapp, Ronald J., 4,436,850, Cl. 524-8.000.

Rasmussen, Ole-Bendt. In situ precipitated fibrous laminate and method of producing same. 4,436,568, Cl. 156-176.000.

Rasshofer, Werner; Reichmann, Wolfgang; Richartz, Adolf; and Dietrich, Manfred, to Bayer Aktiengesellschaft. Single-phase, storage-stable polyol compositions containing salts and the use thereof in the production of polyurethanes. 4,436,841, Cl. 521-106.000.

Rathburn, Lloyd C., to Loomis International Inc. Releasing overshot apparatus. 4,436,334, Cl. 294-86.300.

Rauleder, Gebhard; and Waldmann, Helmut, to Bayer Aktiengesellschaft. Process for the preparation of 2,2-dicyclohexenylpropane. 4,436,943, Cl. 585-357.000.

Raverdy, Claude Y.; and Veron, Serge, to Thomson-CSF. Pyroelectric target and image pick up tube provided with such a target. 4,437,035, Cl. 313-388.000.

Raychem Corporation: *See*—
Tight, Dexter C., Jr., 4,436,566, Cl. 156-56.000.

Raytheon Company: *See*—
Gill, Harry A., Jr., 4,437,023, Cl. 307-296.00R.
Gordon, Bruce E., 4,437,066, Cl. 328-14.000.
Smith, Irl W., 4,436,426, Cl. 356-369.000.

Razza, Aldo. Composite semirigid snow chain, without rear hooking means, for motor vehicles. 4,436,129, Cl. 152-213.00A.

RCA Corporation: *See*—
Bissot, Thomas C.; and Li, Stephen, 4,436,599, Cl. 204-98.000.
Cochran, Larry A., 4,437,124, Cl. 358-166.000.
Farmer, Felta C., Jr.; and Knight, Donald P., 4,437,120, Cl. 358-139.000.
Fish, Joe W., 4,437,094, Cl. 340-825.500.
Harlan, Wayne E., 4,437,123, Cl. 358-166.000.
Kelly, William R.; and Alvero, Ernesto J., 4,436,394, Cl. 354-1.000.
Kern, Werner, 4,436,999, Cl. 250-302.000.
Kocmanek, Karl H.; and Shambelan, Robert C., 4,436,509, Cl. 432-253.000.
Osaka, Susumu; and Toda, Minoru, 4,435,920, Cl. 49-82.000.
Prusak, John J., 4,435,922, Cl. 51-58.000.
Prusak, John J.; and Patel, Bhupendra P., 4,436,603, Cl. 204-194.000.
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Shisler, Robert W.; and McVety, Ronald E., 4,436,242, Cl. 228-264.000.
Wacyk, Ihor T., 4,437,024, Cl. 307-475.000.

Rea, Ike D., to General Electric Company. Quick change tooling system. 4,436,463, Cl. 409-232.000.

Rebholz, Joseph J.; and Tamura, Poohsan N., to Honeywell Inc. Space variant linear phase shifter for optical ambiguity function generator. 4,436,370, Cl. 350-162.120.

Rechtschaffen, Rudolph N.: *See*—
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Reed, Don C., to Exxon Production Research Co. Apparatus and method for removing buoyancy modules from submerged pipe. 4,436,450, Cl. 405-171.000.

Reed Industries, Inc.: *See*—
Schmitt, Donald C.; and Harvill, Melvin J., 4,436,195, Cl. 194-92.000.

Reffert, Rudi W.: *See*—
Hinselmann, Klaus; Naarmann, Herbert; Echte, Adolf; Heil, Eduard; Nikles, Albert; Reffert, Rudi W.; and Hambrecht, Juergen, 4,436,870, Cl. 525-53.000.

Regina, Ralph. Abrading tool. 4,435,923, Cl. 51-170.0TL.

Reh, Carter K.: *See*—
Robak, Edward; and Reh, Carter K., 4,436,277, Cl. 251-6.000.

Reich, Fritz: *See*—
Thalmann, Alfred; and Reich, Fritz, 4,436,987, Cl. 219-535.000.

Reichmann, Wolfgang: *See*—
Rasshofer, Werner; Reichmann, Wolfgang; Richartz, Adolf; and Dietrich, Manfred, 4,436,841, Cl. 521-106.000.

Reinke, Martin: *See*—
Richter, Ekkehard; and Reinke, Martin, 4,436,701, Cl. 422-173.000.

Reiter, Paul C. Method and apparatus for glycosylated hemoglobin separating and measuring fractions. 4,436,820, Cl. 436-67.000.

Rendulic, Francis J.; Trasavage, Robert K.; and Boduch, Paul A., to W. R. Grace & Co. Method and apparatus for making printed circuit boards. 4,436,806, Cl. 430-311.000.

Renfroe, Harris B., to Ciba-Geigy Corporation. Thromboxane synthetase inhibitory N-substituted-2-(1-imidazolyl)indoles. 4,436,746, Cl. 424-273.00R.

Renken, Terry L.: *See*—
Sanderson, John R.; Renken, Terry L.; and Watts, Lewis W., Jr., 4,436,926, Cl. 560-246.000.
Sanderson, John R.; Renken, Terry L.; and Watts, Lewis W., Jr., 4,436,928, Cl. 560-246.000.
Sanderson, John R.; Watts, Lewis W., Jr.; and Renken, Terry L., 4,436,931, Cl. 560-246.000.

Rennert, Klaus-Dieter: *See*—
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Reppelin, Michel: *See*—
Jacques, Roland; Reppelin, Michel; and Seigneurin, Laurent, 4,436,669, Cl. 260-465.00B.

Reutlinger, George W.: *See*—
Parrillo, Louis C.; Reutlinger, George W.; and Wang, Li-Kong, 4,435,895, Cl. 29-571.000.

Reutter, Heinrich, to Reutter Metallwarenfabrik GmbH. Sealing cap for a gasoline tank. 4,436,219, Cl. 220-295.000.

Reutter Metallwarenfabrik GmbH: *See*—
Reutter, Heinrich, 4,436,219, Cl. 220-295.000.

Revay, Blaise, to Kidde, Inc. Manual/electric activated squib actuated discharge valve for fire extinguishers. 4,436,159, Cl. 169-28.000.

Revere Copper and Brass, Inc.: *See*—
Knopp, Walter V., 4,436,682, Cl. 264-70.000.

Revitz, Martin: *See*—
Gardiner, James R.; Makarewicz, Stanley R.; Revitz, Martin; and Shepard, Joseph F., 4,437,108, Cl. 357-59.000.

Rexham Corporation: *See*—
Seiden, Frederick C., 4,436,576, Cl. 156-543.000.

Rexnord Inc.: *See*—
Hodlewsky, Wasly G.; and Bloedorn, William H., 4,436,200, Cl. 198-851.000.

Reyner, Ellis M., to Joy Research Incorporated. Tamper resistant packaging device. 4,436,203, Cl. 206-524.800.

Reynolds Metals Company: *See*—
Tabereaux, Alton T.; and Willett, John T., 4,436,598, Cl. 204-67.000.

Rhodes, John H., Jr.; and Rosati, Alfonso A., to International Business Machines Corporation. Guidance correction method and apparatus for copy paper path in a copier. 4,436,403, Cl. 355-3.0SH.

Rhone-Poulenc Industries: *See*—
Gauthier-Lafaye, Jean; and Perron, Robert, 4,436,889, Cl. 562-519.000.

Rhone-Poulenc Specialites Chimiques: *See*—
Jacques, Roland; Reppelin, Michel; and Seigneurin, Laurent, 4,436,669, Cl. 260-465.00B.

Ribi, Edgar E., to Ribi ImmunoChem Research, Inc. Refined detoxified endotoxin product. 4,436,727, Cl. 424-177.000.

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Ribi, Edgar E., 4,436,727, Cl. 424-177.000.
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Richartz, Adolf: *See*—
Rasshofer, Werner; Reichmann, Wolfgang; Richartz, Adolf; and Dietrich, Manfred, 4,436,841, Cl. 521-106.000.

Richter, Ekkehard; and Reinke, Martin, to Bergwerksverband GmbH. Adsorption reactor and method for removing SO_2 from waste gases. 4,436,701, Cl. 422-173.000.

Ricoh Company, Ltd.: *See*—
Ebi, Yutaka; Fukazawa, Takao; Kawakubo, Toshio; Jinnai, Koichiro; Horike, Masanori; Iwasaki, Kyuhachiro; Ishikawa, Chuji; and Hirata, Toshitaka, 4,437,101, Cl. 346-75.000.
Emoto, Masami, 4,436,415, Cl. 355-55.000.
Ikeda, Kunio, 4,437,103, Cl. 346-140.00R.
Iwata, Nobuo, 4,436,440, Cl. 400-144.200.
Kamiyama, Shin-ichi; and Hasegawa, Yutaka, 4,436,414, Cl. 355-15.000.
Ohta, Masafumi; and Sakai, Kiyoshi, 4,436,800, Cl. 430-59.000.
Satomi, Toyokazu; and Sakuma, Nobuo, 4,436,407, Cl. 355-11.000.

Ricwil, Incorporated: *See*—
Weitzel, Harold B.; and Parman, David G., 4,436,565, Cl. 156-49.000.

Riedmaier, Josef: *See*—
Lamkewitz, Falk; and Riedmaier, Josef, 4,436,064, Cl. 123-142.50R.

Rief, Rolf; and Wetzel, Peter, to Brown, Boveri & Cie AG. Semiconductor power module. 4,436,951, Cl. 174-52.0PE.

Riegler, Ernst; and Zajicek, Ernst, to Voest-Alpine Aktiengesellschaft. Electric furnace arrangement. 4,437,187, Cl. 373-73.000.

Riegler, Ernst: *See*—
Kilches, Helmut D.; Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, 4,436,290, Cl. 266-158.000.

Rigby, Geoffrey R.; and Callcott, Thomas G., to Broken Hill Proprietary Company Limited, The. Recovery of coal from coal handling operations. 4,436,618, Cl. 209-5.000.
Rinkewich, Isaac: *See*—
Rosinek, Shlomo; Rinkewich, Isaac; and Khurgin, Boris, 4,437,098, Cl. 340-870.020.
Ripani, Luciano: *See*—
Carbonaro, Antonio; and Ripani, Luciano, 4,436,884, Cl. 526-111.000.
Riseberg, Leslie A.: *See*—
Lapatovich, Walter P.; Proud, Joseph M.; and Riseberg, Leslie A., 4,436,762, Cl. 427-39.000.
Ritsema, Irving R.; and Colpaert, James J., to Bendix Corporation, The. Disc brake assembly. 4,436,186, Cl. 188-71.800.
Ritter, John C. Paint brush support. 4,436,217, Cl. 220-85.00D.
Rittmaster, Peter A.: *See*—
Booth, John L.; and Rittmaster, Peter A., 4,435,941, Cl. 53-475.000.
Robak, Edward; and Reh, Carter K. Torque pinch valve. 4,436,277, Cl. 251-6.000.
Robert Bosch GmbH: *See*—
Arnold, Winfried, 4,437,048, Cl. 318-663.000.
Eisele, Hermann; Moller, Heinz; and Schmitt, Manfred, 4,437,154, Cl. 364-187.000.
Hafner, Udo; Herth, Harro; Kienzle, Wolfgang; Knapp, Heinrich; Krauss, Rudolf; Lembke, Manfred; Paschke, Werner; and Sauer, Rudolf, 4,436,071, Cl. 123-472.000.
Kotter, Wolfgang, 4,436,114, Cl. 137-596.000.
Stumpe, Werner, 4,436,347, Cl. 303-6.00R.
Robert, George R. Typewriter accessory device for bold face typing. 4,436,441, Cl. 400-304.000.
Roberts, Harold A.: *See*—
Wey, Robert A.; and Roberts, Harold A., 4,436,295, Cl. 269-21.000.
Roberts, Victor D., to General Electric Company. Amalgam heating system for solenoidal electric field lamps. 4,437,041, Cl. 315-248.000.
Robin-Champigneul, Yves J.: *See*—
Rozenwaig, Boris; and Robin-Champigneul, Yves J., 4,437,190, Cl. 455-600.000.
Robinsky, Eli I.; and Laing, David H. Filtration thickening method and apparatus. 4,436,633, Cl. 210-791.000.
Robinson, James W., to Flex-Kleen Corporation. Dust collecting filter cartridge and attachment structure for suspending same from baghouse tube sheet. 4,436,536, Cl. 55-341.00R.
Robota, Stephen: *See*—
Rader, Charles G.; and Robota, Stephen, 4,436,942, Cl. 570-145.000.
Rochester Instrument Systems, Inc.: *See*—
Hauptmann, Eric A., 4,437,059, Cl. 324-142.000.
Rock, Erich; and Brunner, Josef, to Julius Blum Ges. m.b.H. Pull-out guide assembly for drawers, shelves or the like. 4,436,357, Cl. 312-338.000.
Rockel, Manfred B.: *See*—
Prinz, Bruno; Rockel, Manfred B.; Rudolph, Gunther; Heubner, Ulrich; and Zoebe, Hugo, 4,436,790, Cl. 428-675.000.
Rockwell International Corporation: *See*—
Fonio, Carlo, 4,436,296, Cl. 270-31.000.
Lawson, Peter, 4,436,126, Cl. 144-130.000.
Soclof, Sidney I., 4,435,899, Cl. 29-577.00R.
Roderburg, Harald, to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Apparatus for corrugating pipes. 4,435,968, Cl. 72-77.000.
Roeschlein, Eugene R.: *See*—
Ante, Louis E.; Lindquist, Richard A.; and Roeschlein, Eugene R., 4,436,049, Cl. 114-254.000.
Rogers Corporation: *See*—
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Rohm GmbH: *See*—
Kreuzburg, Eberhard; Von Der Pahle, Dietrich J.; Monsheimer, Rolf; Pfleiderer, Ernst; and Taeger, Tilman, 4,436,624, Cl. 210-632.000.
Rohm and Haas Company: *See*—
Cholod, Michael S., 4,436,893, Cl. 528-173.000.
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Rohr Industries, Inc.: *See*—
Norris, Brian; and Castro, Robert M., 4,436,592, Cl. 204-15.000.
Rohr, Jakob, to George Fischer Ltd. Cast vehicle wheel rim. 4,436,133, Cl. 152-381.300.
Rohr, Otto: *See*—
Berrer, Dagmar; Pissiotas, Georg; and Rohr, Otto, 4,436,935, Cl. 564-49.000.
Rohrig, Klaus, to Berning & Sohne. Apparatus for girding package with bonded synthetic-resin strip. 4,435,945, Cl. 53-589.000.
Rolland, Marie L.: *See*—
Cavy, Claude; and Rolland, Marie L., 4,437,012, Cl. 250-491.100.
Roller, Philip C.; and Suckow, Chris A., to Truck-Lite Company, Inc. Shock absorbing lamp assembly for baseless cartridge bulbs and the like. 4,437,145, Cl. 362-306.000.
Rolligon Corporation: *See*—
Blagg, Leon, 4,436,475, Cl. 414-569.000.
Ron, Moshe; Kleiner, Matvei; and Navon, Uri, to Technion Research and Development Foundation Ltd. Method and apparatus for air-conditioning by means of a hydrogen heat pump. 4,436,539, Cl. 62-4.000.
Rood, William E., Jr. Towed cotton retrieving belt assembly. 4,435,947, Cl. 56-28.000.
Rosati, Alfonso A.: *See*—
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Rose, David B.: *See*—
Cork, Robin M. S.; and Rose, David B., 4,437,184, Cl. 371-19.000.
Rose, David M.: *See*—
Rose, William; and Rose, David M., 4,436,308, Cl. 273-237.000.
Rose, Donald K.; and Silverman, Peter J., to Intel Corporation. Method of forming multiplexed magnetic bubble detectors. 4,436,579, Cl. 156-626.000.
Rose, William; and Rose, David M. Bingo game display. 4,436,308, Cl. 273-237.000.
Rosenblum, Jack. Method and apparatus for automobile actuated power generation. 4,437,015, Cl. 290-1.00R.
Rosinek, Shlomo; Rinkewich, Isaac; and Khurgin, Boris, to Matam, Ltd. Apparatus for electronically reading mechanical meters having non-simultaneously changing digits. 4,437,098, Cl. 340-870.020.
Roskott, Lodewijk: *See*—
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Rosno, Gordon W.: *See*—
Olmsted, Gaylord S.; and Rosno, Gordon W., 4,436,016, Cl. 89-1.809.
Ross, Dennis W.: *See*—
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Rossmann, Christian: *See*—
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Rothe, Hans-Jochen: *See*—
Hofmann, Hansdieter; Rothe, Hans-Jochen; Skupin, Georg; and Wolff, Konrad, 4,436,898, Cl. 528-336.000.
Rother, Bruno; and Trommen, Hartmut, to G.A. Pfleiderer GmbH & Co., KG. Centrifugally cast pole comprised of a reinforced resin for supporting a light or the like upon an end thereof. 4,436,781, Cl. 428-365.000.
Rotthaus, Heinz: *See*—
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Rougeolle, Daniel, to Thomson-CSF. Device for the recovery of a clock signal from a binary signal. 4,437,071, Cl. 331-1.00A.
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Christidis, Yani; and Fournex, Robert, 4,436,752, Cl. 424-317.000.
Rowton, Richard L.; and Cuscurida, Michael, to Texaco Inc. High-resilience polyurethane foams having improved resistance to shrinkage. 4,436,843, Cl. 521-167.000.
Rozenwaig, Boris; and Robin-Champigneul, Yves J. Device for switching signals by optical means and automatic switching units comprising said device. 4,437,190, Cl. 455-600.000.
Rudnick, Paul J.: *See*—
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Rueckert, Barry J., to Eaton Corporation. Current source inverter commutation-spike-voltage protection circuit including over-current and over-voltage protection. 4,437,133, Cl. 361-33.000.
Russak, Michael A., to United States of America, Energy. Electrochemical photovoltaic cell having ternary alloy film. 4,436,558, Cl. 148-1.500.
Russo, Neil: *See*—
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Russon, Darrel L.; and Wheeler, Warren H., to Boeing Company, The. Automated feed for a punch press and method of using same. 4,436,007, Cl. 83-23.000.
Ruth, Roger A.: *See*—
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Ruti Machinery Works Ltd.: *See*—
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van Mullekom, Hubert P., 4,436,122, Cl. 139-435.000.
Rutkowski, Edward J., to National Gypsum Company. Metal stud. 4,435,936, Cl. 52-481.000.
Rutkowski, Edward J.; and Krowl, Thomas R., to National Gypsum Company. Vinyl siding attachment. 4,435,938, Cl. 52-521.000.
Rux GmbH, Firma: *See*—
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Ryan, Wayne L., to Streck Laboratories, Inc. Simulated human platelets from red blood cells. 4,436,821, Cl. 436-10.000.
Saccucci, Michael R. Counting device. 4,436,990, Cl. 235-1.00R.
Sadao, Kozima: *See*—
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chi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,436,921, Cl. 544-238.000.
Saiki, Atsushi; Iwayanagi, Takao; Nonogaki, Saburo; Nishida, Takashi; and Harada, Seiki, to Hitachi, Ltd. Selective etching method of polyimide type resin film. 4,436,583, Cl. 156-659.100.
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Saita, Hiroshi: *See*—
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Saito, Yuichi: *See*—
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Saitou, Sinichi, to Olympus Optical Co., Ltd. Reel shaft/reel hub fitting apparatus. 4,436,256, Cl. 242-200.000.
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Sakaguchi, Kiyoshi: *See*—
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Sakai, Kiyoshi: *See*—
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Sakai, Osamu: *See*—
Ogata, Masahiro; and Sakai, Osamu, 4,437,135, Cl. 361-91.000.
Sakai, Yoshio: *See*—
Okudaira, Sadayuki; Saida, Hiroji; Sakai, Yoshio; Nishimatsu, Shigeru; and Suzuki, Keizo, 4,436,581, Cl. 156-643.000.
Sakamaki, Hisashi: *See*—
Inuzuka, Tsuneki; Ishida, Masato; Tanioka, Hiroshi; and Sakamaki, Hisashi, 4,436,408, Cl. 355-14.00R.
Sakamoto, Kentaro: *See*—
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Sakamoto, Noboru; Yamashita, Itaru; Wada, Satoshi; Yano, Kenichi; and Oda, Suehiro, to Kawasaki Steel Corporation. Vertical down welding process by gravity arc welding and welding machine therefor. 4,436,981, Cl. 219-124.320.
Sakamoto, Yoshiaki: *See*—
Nishizako, Shizutaka; Ishii, Isao; and Sakamoto, Yoshiaki, 4,436,831, Cl. 501-119.000.
Sakane, Toshio: *See*—
Takahashi, Junichi; Sakane, Toshio; and Itoh, Yuji, 4,436,388, Cl. 351-206.000.
Sakharnov, Vasily A.: *See*—
Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; Galian, Boris A.; Asoyants, Grigory B.; and Tishura, Vladimir I., 4,436,974, Cl. 219-66.000.
Sako, Yoichiro; and Odaka, Kentaro, to Sony Corporation. Method of error correction. 4,437,185, Cl. 371-39.000.
Sakota, Kazuyuki: *See*—
Ueno, Ryuzo; Sakota, Kazuyuki; Kawata, Keiji; and Naito, Yoshiyuki, 4,436,670, Cl. 260-465.00B.
Sakuma, Nobuo: *See*—
Satomi, Toyokazu; and Sakuma, Nobuo, 4,436,407, Cl. 355-11.000.
Sakuraya, Toshikazu; Nakamura, Hideo; Harada, Nobuo; Fujii, Tetsuya; and Emi, Toshihiko, to Kawasaki Steel Corporation. Method for protecting tuyeres for refining a molten iron. 4,436,287, Cl. 266-47.000.
Salamone, Joseph C.: *See*—
Ellis, Edward J.; and Salamone, Joseph C., 4,436,730, Cl. 424-180.000.
Salant, Richard. Route mapping device. 4,437,085, Cl. 340-286.00M.
Sampson, Michael J., to Staart Enterprises Ltd. Plant technique. 4,436,547, Cl. 71-76.000.
Sancassiano S.p.A.: *See*—
Drocco, Amabile, 4,436,432, Cl. 366-95.000.
Sanden Corporation: *See*—
Fukushima, Eiji; Fukuhara, Seiichi; and Hiraga, Masaharu, 4,436,465, Cl. 409-243.000.
Sanders, David M. Eight-sided game dice with suit attribute markings. 4,436,306, Cl. 273-146.000.
Sanders, Robert N., to Ethyl Corporation. Production of synthetic zeolites. 4,436,708, Cl. 423-329.000.
Sanderson, John R.; Renken, Terry L.; and Watts, Lewis W., Jr., to Texaco Inc. Alkane acetates produced by oxidative esterification of olefins over a catalyst containing a rare earth oxide. 4,436,926, Cl. 560-246.000.
Sanderson, John R.; and Watts, Lewis W., Jr., to Texaco Inc. Alkane acetates produced by oxidative esterification of olefins over thallium borate. 4,436,927, Cl. 560-246.000.
Sanderson, John R.; Renken, Terry L.; and Watts, Lewis W., Jr., to Texaco Inc. Alkane acetates produced by oxidative esterification of olefins over catalyst systems containing oxides and borates. 4,436,928, Cl. 560-246.000.
Sanderson, John R.; and Watts, Lewis W., Jr., to Texaco Inc. Alkane acetates produced by oxidative esterification of olefins over alkali earth metal borates. 4,436,929, Cl. 560-246.000.
Sanderson, John R.; and Watts, Lewis W., Jr., to Texaco Inc. Alkane acetates produced by oxidative esterification of olefins over alkali metal borates. 4,436,930, Cl. 560-246.000.
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Sanderson, John R.; Vanderpool, Steven H.; and Watts, Lewis W., Jr., to Texaco Inc. Alkane acetates produced by oxidative esterification of olefins over ammonium borate in the presence of a carboxylate ion source. 4,436,932, Cl. 560-246.000.
Sandoz Ltd.: *See*—
Annen, Oskar; Egli, Hermann; and Zesiger, Karl, 4,436,521, Cl. 8-493.000.
Harr, Jost, 4,436,744, Cl. 424-272.000.
Valenti, Salvatore, 4,436,524, Cl. 8-551.000.
Sannomiya, Hisayuki: *See*—
Inai, Takayoshi; Saitoh, Teruo; and Sannomiya, Hisayuki, 4,437,111, Cl. 358-44.000.
Sano, Eiichi, to Tokyo Kogaku Kikai Kabushiki Kaisha. Ophthalmic instrument having working distance detecting means. 4,436,389, Cl. 351-208.000.
Sano, Ichiro: *See*—
Suzuki, Yuichi; and Sano, Ichiro, 4,435,885, Cl. 29-2.000.
Sano, Tatsuhiko: *See*—
Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Kutaka; Ishigura, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,436,939, Cl. 568-813.000.
Santa Lucia, Jack; and Trapp, Kenneth, to Independent Maching Company. Winding system. 4,436,249, Cl. 242-18.00R.
Sapkowski, Mechislao, to Honeck, Manfred Fred, a part interest. System and method of recording and reproducing wide band channel information by means of several narrow band channels. 4,437,128, Cl. 358-335.000.
Sarrine, Robert J.: *See*—
Enzer, Steven E.; and Sarrine, Robert J., 4,436,610, Cl. 204-400.000.
Sarser, David: *See*—
Deyesso, Joseph P.; Sarser, David; and Berube, Richard G., 4,436,251, Cl. 242-56.00R.
Sasaki, Takuma; Nakamichi, Kazuya; Tachibana, Yakudo; and Minami, Kiyoshi, to Maruzen Oil Co., Ltd. Novel antitumor glycoprotein substance and its preparation. 4,436,656, Cl. 260-112.00R.
Sasaki, Takuma; Nakamichi, Kazuya; Tachibana, Yakudo; and Minami, Kiyoshi, to Maruzen Oil Co., Ltd. Antitumor glycoprotein substance and preparation thereof. 4,436,657, Cl. 260-112.00R.
Sasseville, Roland E.; Chappell, Joseph S.; and Corcoran, Daniel J., Jr., to Ciba-Geigy Corporation. Apparatus for treating a porous, absorbent material with a foamable chemical composition. 4,435,965, Cl. 68-205.00R.
Satake, Sachio: *See*—
Ichikawa, Mamoru; and Satake, Sachio, 4,436,318, Cl. 280-104.000.
Sato, Kiyoshi: *See*—
Nishikawa, Kazuo; Sato, Kiyoshi; Ichino, Hiroyuki; and Okura, Keniti, 4,437,179, Cl. 369-172.000.
Sato, Kozo; Iwakura, Ken; and Igarashi, Akira, to Fuji Photo Film Co., Ltd. Image recording members. 4,436,920, Cl. 549-227.000.
Sato, Kunihiko: *See*—
Suzuki, Yukio; Sato, Kunihiko; and Muramatsu, Motoyasu, 4,436,072, Cl. 123-488.000.
Sato, Shintaro: *See*—
Nakazawa, Shigeo; and Sato, Shintaro, 4,435,973, Cl. 72-327.000.
Sato, Takahisa: *See*—
Kita, Yuichi; Sakamoto, Kentaro; and Sato, Takahisa, 4,436,922, Cl. 549-251.000.
Sato, Takeo: *See*—
Takahara, Takeshi; Sato, Takeo; Itou, Takeo; and Tamatani, Masaaki, 4,436,646, Cl. 252-301.40S.
Sato, Yo; and Kashiwaba, Tadao, to Kabushiki Kaisha Sato. Portable label applying machine. 4,436,573, Cl. 156-384.000.
Satoh, Heijiro: *See*—
Isowa, Yoshikazu; Ohmori, Muncki; Mori, Kaoru; Ichikawa, Tetsuya; Nonaka, Yuji; Kihara, Keiichi; Oyama, Kiyotaka; Satoh, Heijiro; and Nishimura, Shigeaki, 4,436,925, Cl. 560-19.000.
Satoh, Seiichi: *See*—
Yamaguchi, Noboru; and Satoh, Seiichi, 4,435,881, Cl. 24-16.0PB.
Satoh, Tetsuo: *See*—
Maruhashi, Kenji; Kojima, Ichiro; Oguchi, Yutaka; Endoh, Noboru; and Satoh, Tetsuo, 4,436,663, Cl. 260-245.910.
Satomi, Toyokazu; and Sakuma, Nobuo, to Ricoh Company, Ltd. Electrophotographic reproduction of a three-dimensional object. 4,436,407, Cl. 355-11.000.
Sauer, Rudolf: *See*—
Hafner, Udo; Herth, Harro; Kienzle, Wolfgang; Knapp, Heinrich; Krauss, Rudolf; Lembke, Manfred; Paschke, Werner; and Sauer, Rudolf, 4,436,071, Cl. 123-472.000.
Saueressig GmbH: *See*—
van Ouwerkerk, Wouter C., 4,436,032, Cl. 101-120.000.
Sawabe, Masaki; and Kumagai, Tadanobu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Sealing device for joint. 4,436,310, Cl. 277-11.000.
Sawada, Kozo: *See*—
Aihara, Tetsuo; Nakayama, Yasuharu; Umeyama, Koichi; Sawada, Kozo; and Shinohara, Masaaki, 4,436,849, Cl. 523-501.000.

Sawyer, Daniel D.; and Thompson, Marvin J., to Sperry Corporation. Cache/disk subsystem with dual aging of cache entries. 4,437,155, Cl. 364-200.000.

Saxena, Arjun N. Multilevel metallization process for integrated circuits. 4,436,582, Cl. 156-656.000.

Sayles, Scott M.; Castagnos, Leonce F., Jr.; Schrader, Charles H.; Dillingham, Edward W.; and Scott, Richard P., deceased (by Scott, Candice Chord, executrix), to Texaco Inc. Two stage catalytic cracking process. 4,436,613, Cl. 208-74.000.

Scanlon, William F., to Heinemann Electric Company. Circuit protector having a lamp within its handle and terminals therefor. 4,436,972, Cl. 200-315.000.

Scartazzini, Riccardo: *See*—
Sedelmeier, Gottfried; and Scartazzini, Riccardo, 4,436,903, Cl. 544-016.000.

Schaap, A. Paul; Busch, George E.; and Nolen, Robert L., Jr., to KMS Fusion, Inc. Storage and retrieval of singlet oxygen. 4,436,715, Cl. 423-579.000.

Schaefer, Rudolf. Clamp joint for pipes. 4,436,327, Cl. 285-364.000.

Schafer, Rudolf: *See*—
Mayer, Karl M.; and Schafer, Rudolf, 4,436,430, Cl. 366-13.000.

Schall, William R. Globe-shaped bells with single-piece shells. 4,436,052, Cl. 116-148.000.

Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Neubert, Peter, to Boehringer Mannheim GmbH. Ketals of 3''''-dehydrocardenolide tridigitoxosides. 4,436,735, Cl. 424-182.000.

Scheck, Georg: *See*—
Storandt, Ralf; Scheck, Georg; and Biermann, Peter, 4,436,321, Cl. 280-612.000.

Scheie, Carl E.; and Muma, G. Arnold, to Brunswick Corporation. Method and apparatus for analyzing conditioner on a bowling lane surface. 4,437,010, Cl. 250-459.100.

Schering Corporation: *See*—
Ganguly, Ashit K.; Liu, Yi-Tsung; and Mallams, Alan K., 4,436,729, Cl. 424-180.000.

Scherrer, Edward P., to FMC Corporation. Mechanism for connecting and disconnecting crane sections. 4,436,444, Cl. 403-24.000.

Schettler, Helmut: *See*—
Miersch, Eddehard F.; Pollmann, Kurt; Schettler, Helmut; and Zuhlke, Rainer, 4,437,022, Cl. 307-270.000.

Scheu, Ernst: *See*—
Schnabel, Wolfram; Scheu, Ernst; and Serbent, Harry, 4,436,286, Cl. 266-44.000.

Schick, Martin J.; and Knitter, Kathy A., to Diamond Shamrock Chemicals Company. Aqueous slurries of carbonaceous materials. 4,436,528, Cl. 44-51.000.

Schiffner, Gerhard, to Siemens Aktiengesellschaft. Sensor which is sensitive to pressure, tension, torsion and heat and a process of operation. 4,436,422, Cl. 356-349.000.

Schloman, William W., Jr., to Goodyear Tire & Rubber Company, The. Phenol-melamine resins for improving rubber to metal adhesion. 4,436,853, Cl. 524-91.000.

Schmalbein, Dieter: *See*—
Biehl, Reinhard; and Schmalbein, Dieter, 4,437,063, Cl. 324-316.000.

Schmid, Eduard. Pressure dressing with cushion. 4,436,089, Cl. 128-155.000.

Schmid, Friedbert; and Raasch, Hans, to Stahlecker, Fritz; and Stahlecker, Hans. Opening roller unit for open-end spinning installations. 4,435,953, Cl. 57-408.000.

Schmid, Manfred: *See*—
Donner, Siegmar; Strempler, Gunter; and Schmid, Manfred, 4,436,298, Cl. 271-10.000.

Schmidlkofer, Jakob: *See*—
Pirson, Ewald; Schmidlkofer, Jakob; and Innertsberger, Ernst, 4,436,647, Cl. 252-358.000.

Schmidt, Gunther; and Etzler, Carl-Christian, to Dornier System GmbH. Apparatus for the controlled advance and retraction of a flexible pay-out connection fixed to a satellite body. 4,436,259, Cl. 244-3.100.

Schmidt, Paul; and Legille, Edouard, to Paul Wurth S.A. Rotary support for continuous casting ladles. 4,436,293, Cl. 266-276.000.

Schmidt, Ulrich, to Rotelmann & Co., Firma. Pipe-mounted valve-type flow meter. 4,435,980, Cl. 73-198.000.

Schmidt, William P.; and Hutchinson, Franklin D., to Mirror Lite Company. Elliptical mirror for vehicular use. 4,436,372, Cl. 350-293.000.

Schmitt, Donald C.; and Harvill, Melvin J., to Reed Industries, Inc. Multi-coin chute mechanism. 4,436,195, Cl. 194-92.000.

Schmitt, Manfred: *See*—
Eisele, Hermann; Moller, Heinz; and Schmitt, Manfred, 4,437,154, Cl. 364-187.000.

Schmitt, Wilhelm, to Carl Freudenberg, Firma. Cassette seal having a counterring free from unrelieved internal stress. 4,436,317, Cl. 277-134.000.

Schnabel, Roland, to JENAer Glaswerk Schott & Gen. Capillary diaphragms for use in diafiltration. 4,436,626, Cl. 210-652.000.

Schnabel, Wolfram; Scheu, Ernst; and Serbent, Harry, to Metallgesellschaft Aktiengesellschaft. Process of afterburning combustible constituents of exhaust gases from rotary kilns. 4,436,286, Cl. 266-44.000.

Schnadig Corporation: *See*—
Talley, Thomas H.; Sheets, Lee W.; and Wiley, Alvin F., 4,435,860, Cl. 5-13.000.

Schneider, Charles. Frameless foam base for upholstered seating furniture and method. 4,436,343, Cl. 297-456.000.

Scholz, Wolfgang: *See*—
Zipp, Otmar; Bollmann, Heinz; Stutz, Herbert; and Scholz, Wolfgang, 4,436,869, Cl. 525-51.000.

Schonafinger, Karl; Beyerle, Rudi; Bohn, Helmut; Just, Melitta; Martorana, Piero A.; and Nitz, Rolf-Eberhard, to Cassella Aktiengesellschaft. 3-[N-(Lower alkyl)-N-(tetrahydro-3-thienyl 5,5-dioxide)]hydnonimines. 4,436,743, Cl. 424-269.000.

Schonwald, Siegfried, to Siemens Aktiengesellschaft. Compressor and lubricating pump assembly. 4,436,490, Cl. 417-372.000.

Schoonhoven, Richard: *See*—
Moschitz, Gerhard; and Schoonhoven, Richard, 4,437,170, Cl. 364-900.000.

Schrader, Charles H.: *See*—
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Schreiber, Paul T., to Tandy Corporation. Switchable bandpass filter. 4,436,956, Cl. 179-2.00C.

Schriever, Frederick G. Self-aligning load leveling device. 4,436,268, Cl. 248-188.300.

Schroeder, Arnold; and Roskott, Lodewijk, to Akzona Incorporated. Process for the manufacture of a foundry core or mould. 4,436,844, Cl. 523-144.000.

Schroeter, Siegfried H.: *See*—
Ashby, Bruce A.; and Schroeter, Siegfried H., 4,436,924, Cl. 556-416.000.

Schrother, Gerhard, to Siemens Aktiengesellschaft. Electromagnetic switchgear. 4,437,020, Cl. 307-135.000.

Schrotter, Gerhard: *See*—
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Schruben, Johanna S.: *See*—
Steinbruegge, Kenneth B.; Schruben, Johanna S.; and Taylor, Lyle H., 4,436,363, Cl. 350-1.600.

Schuldt, Gerhardt, to ADS - Anker GmbH. Cash drawer for cash registers in tellers' stations, sales counters or the like. 4,436,989, Cl. 235-22.000.

Schultz, Ward E.: *See*—
Arnold, Dan M.; Smith, Harry D., Jr.; and Schultz, Ward E., 4,436,996, Cl. 250-256.000.

Schulz, Rudi; Puestel, Hubert; Weber, Georg; and Kuerten, Heribert, to BASF Aktiengesellschaft. Reactor for hydrogenating coal slurry. 4,436,702, Cl. 422-195.000.

Schulze, Stephen R.: *See*—
Flood, Paul W.; Mason, Charles D.; and Schulze, Stephen R., 4,436,872, Cl. 525-179.000.

Schupp, Eberhard: *See*—
Batzill, Wolfgang; Diefenbach, Horst; Geist, Michael; and Schupp, Eberhard, 4,436,878, Cl. 525-438.000.

Schupp, Gerold: *See*—
Fuchs, Helmut V.; Schupp, Gerold; and Voigtsberger, Carl-Alexander, 4,435,974, Cl. 73-40.50A.

Schutz, Alain: *See*—
Jacobs, Pierre; Poncelet, Georges; and Schutz, Alain, 4,436,832, Cl. 502-84.000.

Schutz, Hans U.: *See*—
Buhler, Arthur; and Schutz, Hans U., 4,436,659, Cl. 260-146.00R.

Schuwerk, Wolfgang, to Escher Wyss Aktiengesellschaft. Controlled deflection roll with control arrangement. 4,435,971, Cl. 72-243.000.

Schwartz, Hermann, to Siegfried Preyer. Photoelectric measurement of moving filamentary material. 4,436,427, Cl. 356-385.000.

Schwartzman, Steven M.: *See*—
Ribi, Edgar E.; Schwartzman, Steven M.; and Cantrell, John L., 4,436,728, Cl. 424-177.000.

Schwarzmann, Matthias: *See*—
Broecker, Franz J.; Gruendler, Karl-Heinz; Marosi, Laszlo; Schwarzmann, Matthias; Triebskorn, Bruno; and Zirker, Guenter, 4,436,833, Cl. 502-176.000.

Schwenk, Dennis P.: *See*—
Coldren, Daniel R.; and Schwenk, Dennis P., 4,436,358, Cl. 339-17.00C.

Scientific Measurement Systems, Inc.: *See*—
Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., 4,437,006, Cl. 250-363.00S.

SCM Corporation: *See*—
Longrod, Scott J., 4,436,192, Cl. 192-43.100.

Scott, Allen W., to General Electric Company. Control knob to shaft assembly. 4,435,993, Cl. 74-553.000.

Scott, Candice Chord, executrix: *See*—
Sayles, Scott M.; Castagnos, Leonce F., Jr.; Schrader, Charles H.; Dillingham, Edward W.; and Scott, Richard P., deceased, 4,436,613, Cl. 208-74.000.

Scott, Joseph A.: *See*—
Bequette, Robert J.; Hobbs, Linda G.; and Scott, Joseph A., 4,436,738, Cl. 424-238.000.

Scott, Richard P., deceased: *See*—
Sayles, Scott M.; Castagnos, Leonce F., Jr.; Schrader, Charles H.; Dillingham, Edward W.; and Scott, Richard P., deceased, 4,436,613, Cl. 208-74.000.

Scott, Robert J., to Union Carbide Corporation. Nonionic surfactants for automatic dishwasher detergents. 4,436,642, Cl. 252-95.000.

Seaburg, Paul A.; and Lautensleger, Richard W., to Armco Inc. Alternating V-truss roof system and method of erection. 4,435,932, Cl. 52-263.000.

Sealectro Corporation: *See—*
Albert, Gordon H.; and Feinman, Harvey M., 4,436,991, Cl. 235-468.000.
Seatts, William. Self-extinguishing cigar or cigarette. 4,436,101, Cl. 131-349.000.
Sedelmeier, Gottfried; and Scartazzini, Riccardo, to Ciba-Geigy Corporation. Process for the production of 7 β-substituted-3-unsubstituted-3-cephem-4-carboxylic acid compounds. 4,436,903, Cl. 544-016.000.
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Segawa, Yoshiaki: *See—*
Okada, Yoshio; Suzuki, Yoshiaki; Murakami, Ryohei; and Segawa, Yoshiaki, 4,436,352, Cl. 312-228.000.
Seguy, Bernard R. Method for reducing desorbent consumption in recovery systems. 4,436,534, Cl. 55-58.000.
Seiberlich, Walter, to Maag Gear-Wheel & Machine Company Limited. Clamping apparatus for a cutter. 4,436,464, Cl. 409-233.000.
Seibert, Michael J. Implement attachment for the front end of a tractor. 4,436,162, Cl. 172-810.000.
Seiden, Frederick C., to Rexham Corporation. Apparatus for forming bottom heat seals. 4,436,576, Cl. 156-543.000.
Seigneurin, Laurent: *See—*
Jacques, Roland; Reppelin, Michel; and Seigneurin, Laurent, 4,436,669, Cl. 260-465.00B.
Seiki, Kazuo; Motobayashi, Kozo; Yoshizawa, Toshio; Yoshida, Yoshiaki; and Onoue, Keiji, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Fiber opening device in open-end spinning unit. 4,435,954, Cl. 57-408.000.
Seiko Koki Kabushiki Kaisha: *See—*
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Seimiya, Ryubun; Iwai, Fumio; and Nosaka, Isao, to Konishiroku Photo Industry Co., Ltd. Copying machine. 4,436,402, Cl. 355-3.00R.
Seki, Fumio, to Yoshida Kogyo K K. Apparatus for attaching fastener elements onto a garment. 4,436,238, Cl. 227-149.000.
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Sekiwa, Mitsunao: *See—*
Nakamura, Hiromichi; Urano, Haruya; Kojima, Tatsuo; and Sekiwa, Mitsunao, 4,436,006, Cl. 83-13.000.
Sekiya, Teruo, to Hitachi, Ltd. Roll changing device for rolling mill. 4,435,970, Cl. 72-239.000.
Selines, Ronald J.: *See—*
Andreini, Rockne J.; Mehlman, Stewart K.; Selines, Ronald J.; and Agrawal, Balkishan, 4,436,553, Cl. 75-52.000.
Semler, Paul M., Jr. Offset, extendable, quick-release plumbness indicating apparatus. 4,435,908, Cl. 33-376.000.
Senco Products, Inc.: *See—*
Jobe, William T., 4,436,236, Cl. 227-123.000.
Vornberger, George F.; and Crutcher, John P., 4,436,237, Cl. 227-130.000.
Senco Southeast, Inc.: *See—*
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Senda, Kousaku: *See—*
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Senn, Georg; and Koch, Walter, to Ruti Machinery Works Ltd. Device for storing filamentary material for use on a loom. 4,436,123, Cl. 139-452.000.
Serbent, Harry: *See—*
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Sette, Robert A.: *See—*
Dorman, John G.; Balbo, Anthony M.; Randall, Charles E.; and Sette, Robert A., 4,436,184, Cl. 187-29.00R.
Sevastakis, Gus. Horizontal continuous casting apparatus. 4,436,143, Cl. 164-440.000.
Shadinger, Peter R.: *See—*
Allen, Fred E.; Thuener, Bruce W.; and Shadinger, Peter R., 4,436,500, Cl. 425-290.000.
Shahan, James E.; and Pitts, Loren. Thermal acoustical pipe insulation. 4,436,119, Cl. 138-149.000.
Shain, Guey-Ji. Decorative flower pot. 4,435,918, Cl. 47-79.000.
Shambelan, Robert C.: *See—*
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Shapiro, Alan K.: *See—*
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Sharp Kabushiki Kaisha: *See—*
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Yano, Kohzo; Hamada, Hiroshi; Inami, Yasuhiko; and Wada, Tomio, 4,436,380, Cl. 350-357.000.
Shaw, Jane E.: *See—*
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Sheads, Richard E.; and Segal, David A., to Union Carbide Corporation. Two solvent process for preparation of esters of 3,5-dibromo-4-hydroxybenzonitrile. 4,436,665, Cl. 260-404.000.
Sheets, Lee W.: *See—*
Talley, Thomas H.; Sheets, Lee W.; and Wiley, Alvin F., 4,435,860, Cl. 5-13.000.
Shell Internationale Research Maatschappij B. V.: *See—*
Bull, Michael J., 4,436,667, Cl. 260-465.00D.
Nacken, Lambertus J. G.; and Baas, Albertus H., 4,436,706, Cl. 423-65.000.
Shell Oil Company: *See—*
Baardman, Frank; van Helden, Robert; and de Nie-Sarink, Margaretha J., 4,436,937, Cl. 564-409.000.
Bannon, Robert P., 4,436,533, Cl. 55-26.000.
Berni, Albert J., 4,437,175, Cl. 367-24.000.
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Smutny, Edgar J., 4,436,946, Cl. 585-510.000.
Shennan, Christopher D.; and Fry, Michael W., to Ciba-Geigy AG. Method of treating a dye image. 4,436,798, Cl. 430-17.000.
Shepard, Joseph F.: *See—*
Gardiner, James R.; Makarewicz, Stanley R.; Revitz, Martin; and Shepard, Joseph F., 4,437,108, Cl. 357-59.000.
Sherk, Fred T., to Phillips Petroleum Company. Hydrocarbon wash liquid for catalyst separation. 4,436,901, Cl. 528-498.000.
Sherwood Medical Company: *See—*
Eseifan, Ali H., 4,436,822, Cl. 436-164.000.
Shevakin, Jury F.; Dobkin, Igor I.; Donskoi, Efim M.; Manov, Grigory L.; Zhdanov, Vasily V.; Berger, Elena S.; Popov, Valery M.; Pavlov, Alexei A.; and Akchurin, Rashid Z., to Gosudarstvenny Nauchnoissledovatelsky, Proektny I Konstruktorsky Institut Splavov I Obrabotki Tsvetnykh Metallov "Giprotsvetmetobrabotka". Pipe-welding mill for production of coiled pipes. 4,435,886, Cl. 29-33.00D.
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Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,436,747, Cl. 424-274.000.
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Nakamura, Norihiko; and Shibata, Yoshiaki, 4,436,068, Cl. 123-310.000.
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Takahara, Takeshi; Sato, Takeo; Itou, Takeo; and Tamatani, Masaaki, 4,436,646, Cl. 252-301.40S.
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Yoshida, Masashi; Yokota, Hajime; Aman, Mitsuji; and Shigemura, Tatsuya, 4,437,129, Cl. 360-85.000.
Shigeru, Jhono, to Tempo G. Means for retaining jewelery for interlocking with precise preforms. 4,435,963, Cl. 63-18.000.
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Shimano Industrial Company Limited: *See—*
Shimano, Keizo, 4,435,983, Cl. 73-493.000.
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Shimaoka, Motohiro, to Alps Electric Co., Ltd. Flexible magnetic disk device. 4,437,132, Cl. 360-105.000.
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Kitano, Masuo, 4,436,436, Cl. 368-204.000.
Shimazaki, Yasumi: *See—*
Tsuyama, Yoshito; Shimazaki, Yasumi; Kakita, Kazutoshi; and Hirokawa, Toshio, 4,436,239, Cl. 228-17.000.
Shimizu, Fumio, to Light Koki Co., Ltd. Lens group shifting mechanism for zoom binoculars. 4,436,387, Cl. 350-556.000.
Shimizu, Shigeo; Takano, Hiroyuki; Yoshimura, Shoji; and Takada, Kinji, to Kanto Ishi Pharmaceutical Co., Ltd. Cephalosporins. 4,436,904, Cl. 544-27.000.
Shimizu, Tetsuo, to Nissan Motor Company, Limited. Hatchback door of a motor vehicle. 4,436,336, Cl. 296-76.000.
Shin Meiwa Industry Co., Ltd.: *See—*
Mochizuki, Taketoshi; Matsuo, Kazuya; Kudo, Mituo; Arai, Akira; Yamada, Junichi; Shono, Keizi; Aoki, Masaaki; Ohmori, Masaichi; and Nishi, Genichiro, 4,435,962, Cl. 62-175.000.
Shinohara, Masaaki: *See—*
Aihara, Tetsuo; Nakayama, Yasuharu; Umeyama, Koichi; Sawada, Kozo; and Shinohara, Masaaki, 4,436,849, Cl. 523-501.000.
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Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Kutaka; Ishigura, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,436,939, Cl. 568-813.000.
Shiota, Ikuo: *See—*
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Shipulina, Ljudmila D.: *See—*
Vichkanova, Serafima A.; Shipulina, Ljudmila D.; Glyzin, Vladimir I.; Bankovsky, Alexandr I.; Pimenov, Mikhail G.; and Boryaev, Klim I., 4,436,732, Cl. 424-180.000.
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Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito, 4,437,029, Cl. 310-198.000.
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Shiue, Chyng-Yann; and Wolf, Alfred P., to United States of America, Energy. ^{18}F-4-Fluoroantipyrine. 4,436,717, Cl. 424-1.100.

Shono, Keizi: *See*—
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Shop-Vac Corporation: *See*—
Berfield, Robert C., 4,435,877, Cl. 15-326.000.

Shore, John H. Gate valve. 4,436,283, Cl. 251-174.000.

Shurden, Charles H.: *See*—
Kelly, James C.; and Shurden, Charles H., 4,436,231, Cl. 223-40.000.

Sibley, Alan T.: *See*—
Buck, Daniel M.; Sibley, Alan T.; and Kaiser, John J., 4,436,696, Cl. 419-57.000.

Siegfried Aktiengesellschaft: *See*—
Molnar, Istvan; Thiele, Kurt; Geissmann, Felix; and Jahn, Ulrich, 4,436,913, Cl. 548-316.000.

Siegfried Preyer: *See*—
Schwartz, Hermann, 4,436,427, Cl. 356-385.000.

Siemens Aktiengesellschaft: *See*—
Diepers, Heinrich, 4,437,033, Cl. 310-334.000.
Guenther, Werner, 4,437,144, Cl. 362-275.000.
Haendle, Joerg; and Horbaschek, Heinz, 4,437,117, Cl. 358-111.000.
Hoffmann, Richard; and Zobawa, Franz, 4,436,362, Cl. 339-103.00M.
Kandler, Erich, 4,437,099, Cl. 343-756.000.
Keller, Wolfgang; and Schrotter, Gerhard, 4,436,578, Cl. 156-620.000.
Moschitz, Gerhard; and Schoonhoven, Richard, 4,437,170, Cl. 364-900.000.
Ophoff, Paul-Arthur; and Weinel, Johann, 4,437,005, Cl. 250-343.000.
Schiffner, Gerhard, 4,436,422, Cl. 356-349.000.
Schonwald, Siegfried, 4,436,490, Cl. 417-372.000.
Schrother, Gerhard, 4,437,020, Cl. 307-135.000.
Veith, Werner, 4,437,044, Cl. 315-366.000.

Siemens Gammasonics Inc.: *See*—
Anderson, William, 4,437,161, Cl. 364-414.000.

Siemon Company, The: *See*—
Knickerbocker, Robert H., 4,436,360, Cl. 339-97.00P.

Sigiols, John P.: *See*—
Bonham, Richard T.; Sigiols, John P.; and Dinkelacker, Paul H., 4,436,045, Cl. 112-313.000.

Silks, Walter; and Gonski, Joseph, to Goodman Equipment Corporation. Continuous mining machine having contour cutters. 4,436,345, Cl. 299-59.000.

Silverman, Peter J.: *See*—
Rose, Donald K.; and Silverman, Peter J., 4,436,579, Cl. 156-626.000.

Silverstein, Lewis S.: *See*—
Dahlgren, William V., Jr.; Silverstein, Lewis S.; and Claire, Edward W., 4,437,150, Cl. 364-474.000.

Simjian, Luther G. Check controlled metering device. 4,436,992, Cl. 235-381.000.

Simmonds, Robert C., Jr.; and Gilbride, Andrew J., to USM Corporation. Method of lasting shoes. 4,436,771, Cl. 427-284.000.

Simmons, Louis D., to United States of America, Air Force. Hermetic package using membrane seal. 4,436,220, Cl. 220-359.000.

Simmons Universal Corporation: *See*—
King, Frank R.; and Engler, Donald J., 4,435,862, Cl. 5-66.000.

Simmons, William J.; and Tinder, Richard, to Eastman Kodak Company. Sheet handling apparatus. 4,436,404, Cl. 355-3.0SH.

Simms, John A.: *See*—
Brixius, Darryl W.; and Simms, John A., 4,436,885, Cl. 526-214.000.

Simon, Hans. Cable socket with traction relief for the housings of electric machines. 4,436,265, Cl. 248-56.000.

Simon, Joseph A. Process for forming integral spindle-axle tubes. 4,435,972, Cl. 72-256.000.

Simonotti, Lucio; and Motta, Carlo, to Ing. C. Olivetti & C., S.p.A. Apparatus for depositing valuables in envelopes with automatic envelope dispensing. 4,436,182, Cl. 186-37.000.

Simons U.S.A. Corporation: *See*—
Callaway, Milton A., 4,435,864, Cl. 5-453.000.

Simpson, Frank F., to Black & Decker Inc. Arrangement for converting rotary motion to reciprocatory motion. 4,436,163, Cl. 173-117.000.

Sims, James O. Method of manufacture of hydraulic cylinders utilizing bronze overlays for engaging surfaces. 4,435,893, Cl. 29-412.000.

Sincerbox, Glenn T.: *See*—
Depp, Steven W.; and Sincerbox, Glenn T., 4,436,420, Cl. 356-128.000.

Sinelschikov, Andrei K.: *See*—
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; and Sinelschikov, Andrei K., 4,436,830, Cl. 501-96.000.

Singer, Barry M., to U.S. Philips Corporation. Pyroelectric vidicon with improved signal-to-noise ratio. 4,437,118, Cl. 358-113.000.

Singer Company, The: *See*—
Cantada, Edilberto, 4,436,043, Cl. 112-221.000.
Kumar, Shri A.; Ljung, Bo H. G.; and Koper, James G., 4,436,423, Cl. 356-350.000.

Singer, Mark I.: *See*—
Blom, Eric D.; and Singer, Mark I., 4,435,853, Cl. 3-1.300.

Sioux Steam Cleaner Corporation: *See*—
Finger, John F., 4,436,113, Cl. 137-565.000.

SKF Kugellagerfabriken GmbH: *See*—
Ernst, Horst M.; Brandenstein, Manfred; Walter, Lothar; and Olschewski, Armin, 4,435,890, Cl. 29-148.40R.
Horling, Peter; Hetterich, Hermann; Dobhan, Herbert; and Klupfel, Norbert, 4,435,889, Cl. 29-148.40C.
Olschewski, Armin; Brandenstein, Manfred; and Kunkel, Heinrich, 4,436,516, Cl. 464-128.000.

Skrzec, Adam E., to Stauffer Chemical Company. Fluid bed process for preparing phenylphosphonous dichloride. 4,436,673, Cl. 260-543.00P.

Skupin, Georg: *See*—
Hofmann, Hansdieter; Rothe, Hans-Jochen; Skupin, Georg; and Wolff, Konrad, 4,436,898, Cl. 528-336.000.

Slack, Ian D.; Ellis, David G.; and Firth, Colin, to Plasticisers Limited. Reinforcement product for use in cement boards and a method of manufacturing said product and boards. 4,436,564, Cl. 156-42.000.

Sloan Valve Company: *See*—
Billeter, Henry R., 4,436,116, Cl. 137-625.470.

Smadar, Yechiel: *See*—
Trilling, David M.; and Smadar, Yechiel, 4,436,759, Cl. 426-573.000.

Smay, John W., to Hughes Aircraft Company. System for autonomous earth-pointing acquisition of a dual-spin satellite. 4,437,047, Cl. 318-649.000.

Smetana, Michael: *See*—
Ergler, James M.; Kohn, Harold; and Smetana, Michael, 4,436,001, Cl. 81-9.510.

Smirl, Richard L., to Borg-Warner Corporation. Variable pulley transmission. 4,436,193, Cl. 192-107.00C.

Smith, Glen H., to Morgan Industries, Inc. Disconnectable valve motor drive. 4,436,278, Cl. 251-130.000.

Smith, Harry D., Jr.: *See*—
Arnold, Dan M.; Smith, Harry D., Jr.; and Schultz, Ward E., 4,436,996, Cl. 250-256.000.

Smith International, Inc.: *See*—
Garrett, William R., 4,436,118, Cl. 138-110.000.

Smith, Irl W., to Raytheon Company. High-precision reflectometer. 4,436,426, Cl. 356-369.000.

Smith, Paul; Lemstra, Pieter J.; Kirschbaum, Robert; and Pijpers, Jacques P. L., to Stamicarbon B.V. Process for the production of polymer filaments having high tensile strength. 4,436,689, Cl. 264-204.000.

Smith, Paul K., to Pierce Chemical Company. Iodinating reagent. 4,436,718, Cl. 424-1.100.

Smith, Stephen L.: *See*—
Hudson, Edwin L.; and Smith, Stephen L., 4,437,171, Cl. 365-177.000.

Smith, Wayne G. Gun and resilient loop projectile therefor. 4,436,077, Cl. 124-18.000.

Smitka, Tim A.; Bunge, Richard H.; French, James C.; and Bloem, Russell J., to Warner-Lambert Company. 12'-Hydroxyverrucarin J and iso-satratoxin H. 4,436,750, Cl. 424-279.000.

Smolarek, James, to Union Carbide Corporation. Shell and tube heat exchanger. 4,436,146, Cl. 165-111.000.

Smoot, Arren F.; and De Jong, Sijtze, to Shell Oil Company. Drill ship pipe capture. 4,436,449, Cl. 405-170.000.

SMS Schloemann-Siemag AG: *See*—
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Smutny, Edgar J., to Shell Oil Company. Preparation of propylene and butylene dimers using palladium cyanide as catalyst. 4,436,946, Cl. 585-510.000.

Sobieniak, Mathew G., to J. A. Webb, Inc. Electrolytic cell having an elastomeric sheet covering the cell base. 4,436,609, Cl. 204-267.000.

Societe Anonyme dite: Alsthom-Atlantique: *See*—
Dupraz, Jean-Pierre, 4,437,134, Cl. 361-56.000.

S.A. Promocab: *See*—
Achard, Serge, 4,437,089, Cl. 340-541.000.

Societe Chimique des Charbonnages S.A.: *See*—
Stein, Claude; and Marbach, Andre, 4,436,859, Cl. 524-297.000.

Societe de Recherches Industrielles: *See*—
Picart, Francois, 4,436,915, Cl. 548-432.000.

Societe d'Etudes, de Realisations et d'Applications Techniques (SERAT): *See*—
Precoul, Michel, 4,436,033, Cl. 102-307.000.

Societe d'Expansion Scientifique "EXPANSIA": *See*—
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,436,874, Cl. 525-327.100.
Aspisi, Christian; Bonato, Marc; and Jacquier, Robert, 4,436,919, Cl. 549-4.000.

Societe d'Optique, Precision Electronique et Mechanique, Sopelem: *See*—
Nollez, Jacques; Ragain, Jacques; and Prevost, Marc, 4,436,051, Cl. 114-340.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.): *See*—
Fondacci, Jean-Luc, 4,435,957, Cl. 60-39.281.

Societe Nationale Elf Aquitaine: *See*—
Peyrouset, Andre; and Spring, Francois, 4,436,658, Cl. 260-122.000.

Societe Nationale Elf Aquitaine (Production): *See*—
Kvasnikoff, Georges; and Voirin, Robert, 4,436,716, Cl. 423-574.00R.

Soclof, Sidney I., to Rockwell International Corporation. Method of producing lateral transistor separated from substrate by intersecting slots filled with substrate oxide. 4,435,899, Cl. 29-577.00R.

Sodini, Giancarlo: *See*—
Canella, Marco; and Sodini, Giancarlo, 4,436,756, Cl. 426-430.000.

Solbes, Albert: *See—*
Demirjian, Ara M.; and Solbes, Albert, 4,437,026, Cl. 310-11.000.
Solobay, Leo A. Electric water heater with upwardly inclined zig-zag flow path. 4,436,983, Cl. 219-306.000.
Somerfleck, Harold H., to United States of America, Navy. Method for forming a protective cover for aircraft having conical radomes. 4,436,569, Cl. 156-217.000.
Sommer, John G.: *See—*
Kuan, Tiong H.; and Sommer, John G., 4,436,857, Cl. 524-260.000.
Sony Corporation: *See—*
Nakatsuyama, Takashi; and Nakano, Yoshitomo, 4,436,959, Cl. 179-6.090.
Sako, Yoichiro; and Odaka, Kentaro, 4,437,185, Cl. 371-39.000.
Yamamoto, Kaichi, 4,437,125, Cl. 358-167.000.
South Louisiana Contractors Inc.: *See—*
Hebert, Francis A., 4,436,235, Cl. 227-111.000.
South Plains Sheet Metal, Inc.: *See—*
Willingham, James T., 4,436,457, Cl. 406-116.000.
Southwest Research Institute: *See—*
Gruber, George J., 4,435,984, Cl. 73-628.000.
Sowinski, Gerard T., to National Gypsum Company. Drywall joint compound packaging. 4,436,204, Cl. 206-525.000.
Sperry Corporation: *See—*
Bernacki, Stephen E.; and Kosicki, Bernard B., 4,436,584, Cl. 156-643.000.
Freimuth, John H.; and Campbell, Willis R., 4,436,027, Cl. 100-88.000.
Jennings, Richard E., 4,435,948, Cl. 56-228.000.
Lindblom, Curtis H.; Lausch, H. Nevin; and Priepke, Edward H., 4,436,248, Cl. 241-101.700.
O'Brien, Steven M., 4,437,166, Cl. 364-900.000.
Sawyer, Daniel D.; and Thompson, Marvin J., 4,437,155, Cl. 364-200.000.
Witalka, Jerome J.; Kurth, Duane G.; and Baber, David J., 4,437,157, Cl. 364-200.000.
Spletzer, Barry L.; and Swiatlowski, George, to Gerber Products Company. Retort crate loader and unloader. 4,436,470, Cl. 414-36.000.
Sprague, Robert A., to Xerox Corporation. Method and means for reducing illumination nulls in electro-optic line printers. 4,437,106, Cl. 346-160.000.
Sprecher, Klemenz: *See—*
Aufderhaar, Ernst; Sprecher, Klemenz; and Zergenyi, Janos, 4,436,660, Cl. 260-239.00D.
Spring, Francois: *See—*
Peyrouset, Andre; and Spring, Francois, 4,436,658, Cl. 260-122.000.
Srinivasan, Gurumakonda R.: *See—*
Gaur, Santosh P.; Lechaton, John S.; and Srinivasan, Gurumakonda R., 4,435,898, Cl. 29-577.00C.
Staart Enterprises Ltd.: *See—*
Sampson, Michael J., 4,436,547, Cl. 71-76.000.
Staas, William H., to Rohm and Haas Company. Imide-san polymer-blends. 4,436,871, Cl. 525-64.000.
Stach, Kurt: *See—*
Fauland, Erich; Kampe, Wolfgang; Stach, Kurt; and Bartsch, Wolfgang, 4,436,742, Cl. 424-269.000.
Stacy, Galen D.; and Likins, Merle R., Jr., to Phillips Petroleum Company. Feed forward carbon black reactor control. 4,436,698, Cl. 422-62.000.
Stahlecker, Fritz; Lang, Kurt; and Erhardt, Rolf, to Stahlecker, Fritz; and Stahlecker, Hans. Spinning assembly for a wrapped yarn spinning machine. 4,435,952, Cl. 57-18.000.
Stahlecker, Fritz: *See—*
Schmid, Friedbert; and Raasch, Hans, 4,435,953, Cl. 57-408.000.
Stahlecker, Hans: *See—*
Schmid, Friedbert; and Raasch, Hans, 4,435,953, Cl. 57-408.000.
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Smith, Paul; Lemstra, Pieter J.; Kirschbaum, Robert; and Pijpers, Jacques P. L., 4,436,689, Cl. 264-204.000.
Woudstra, Gerrit, 4,437,065, Cl. 324-425.000.
Standard Oil Company: *See—*
Carlson, Francis M., 4,436,153, Cl. 166-260.000.
Standard Oil Company (Indiana): *See—*
Fields, Ellis K.; and Clarke, William C., 4,436,940, Cl. 568-857.000.
Forgac, John M.; and Hoekstra, Gerald B., deceased, 4,436,344, Cl. 299-2.000.
Stanistreet, Harold P.: *See—*
Bye, Donald J.; Stanistreet, Harold P.; and Lindenstruth, Werner, 4,436,503, Cl. 425-384.000.
Bye, Donald J.; Stanistreet, Harold P.; and Lindenstruth, Werner, 4,436,687, Cl. 264-164.000.
Star Manufacturing Co.: *See—*
Kim, Kwon S., 4,435,934, Cl. 52-309.700.
Starkville Tool & Die Company: *See—*
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Stauffer Chemical Company: *See—*
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Stein, Claude; and Marbach, Andre, to Societe Chimique des Charbonnages S.A. Polynorbornenes cured with isocyanates and optionally with polyols. 4,436,859, Cl. 524-297.000.
Stein, Hermann: *See—*
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, 4,436,680, Cl. 264-60.000.
Steinbruegge, Kenneth B.; Schruben, Johanna S.; and Taylor, Lyle H., to Westinghouse Electric Corp. Broadband antireflection coating for infrared transmissive materials. 4,436,363, Cl. 350-1.600.
Stelling, Desi D. Oven supporting apparatus incorporating slidable cookware support. 4,436,356, Cl. 312-281.000.
Stellner, Klaus: *See—*
Batz, Hans-Georg; Linke, Hans-Ralf; Stellner, Klaus; and Weimann, Gunter, 4,436,828, Cl. 436-545.000.
Stelz, Dale E.; Carroll, Frank J.; and Whaley, Wilson M., to Racon Incorporated. Refrigeration liquid with blue leak indicator and process of using same. 4,436,641, Cl. 252-68.000.
Stemke, Jeffrey E., to Chevron Research Company. Grease composition with improved low shear stability. 4,436,649, Cl. 252-51.50A.
Stenabaugh, Donald D., to Automation Industries, Inc. Plug for reactor pressure vessel nozzle. 4,436,692, Cl. 376-204.000.
Stephens, Marion A., Jr. Rolling drum tree planter. 4,436,039, Cl. 111-2.000.
Sterling Drug Inc.: *See—*
Margulies, Herman, 4,436,221, Cl. 221-46.000.
Stetson, Karl A.; and Harrison, Irene R., to United Technologies Corporation. Optical strain gauge. 4,436,419, Cl. 356-35.500.
Stewart, Glenn D. Method and apparatus for automatically synchronizing multiple engines. 4,435,961, Cl. 60-719.000.
Stewart, Robert D.; and Gamble, Robert L., to Foster Wheeler Energy Corporation. Fluidized bed reactor utilizing zonal fluidization and anti-mounding air distributors. 4,436,507, Cl. 431-170.000.
Steyert, William A., Jr.: *See—*
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Stoddard, Frank L.: *See—*
Cash, Daniel L.; and Stoddard, Frank L., 4,436,977, Cl. 219-75.000.
Stoll, Kurt; and Glattli, Hans-Heinrich. Pneumatic timer. 4,436,434, Cl. 368-65.000.
Stone, Lester W., to Armco Inc. Concealed fastener support for interlocked channel section panels. 4,435,937, Cl. 52-520.000.
Stone, Lyndon R.: *See—*
Callihan, Rudy B.; and Stone, Lyndon R., 4,436,151, Cl. 166-154.000.
Storandt, Ralf; Scheck, Georg; and Biermann, Peter, to Geze GmbH. Electrically releasable safety ski binding. 4,436,321, Cl. 280-612.000.
Stork, Karl: *See—*
Oppenlaender, Knut; Stork, Karl; and Barthold, Klaus, 4,436,639, Cl. 252-8.55E.
Strader, Don S., to Motor Wheel Corporation. Method and apparatus for manufacture of brake drums. 4,436,139, Cl. 164-112.000.
Strandli, Kaare R.; and Ostlie, Arne M., to A/S Raufoss Ammunisjonsfabrikker. Method of making projectile. 4,435,887, Cl. 29-123.000.
Strandli, Kaare R., to A/S Raufoss Ammunisjonsfabrikker. Tubular projectile. 4,436,035, Cl. 102-364.000.
Streck Laboratories, Inc.: *See—*
Ryan, Wayne L., 4,436,821, Cl. 436-10.000.
Strehler, Hugo; Hoerauf, Werner; and Urbanek, Friedrich, to BASF Aktiengesellschaft. Preparation of polycaprolactam with aqueous extract containing caprolactam and caprolactam oligomers. 4,436,897, Cl. 528-323.000.
Strempler, Gunter: *See—*
Donner, Siegmar; Strempler, Gunter; and Schmid, Manfred, 4,436,298, Cl. 271-10.000.
Stromberg-Carlson Corp.: *See—*
Brightman, Barrie; and Niertit, Frank, 4,437,096, Cl. 340-825.960.
Strong, William A.; and Church, Kenneth, to Strong, William A. Slurry production system. 4,436,429, Cl. 366-2.000.
Strong, William A.; and Church, Kenneth, to Strong, William A. Slurry production system. 4,436,431, Cl. 366-17.000.
Strope, Daniel J.: *See—*
Myers, John W.; and Strope, Daniel J., 4,436,949, Cl. 585-664.000.
Strosberg, Arthur M.: *See—*
Kluge, Arthur F.; Strosberg, Arthur M.; Whiting, Roger L.; and Christie, George A., 4,436,914, Cl. 548-348.000.
Struben, Francis L. Ridge roof. 4,435,926, Cl. 52-3.000.
Strunc, Gerald R., to Pako Corporation. Photographic film web cutter and method. 4,436,008, Cl. 83-42.000.
Studt, William L.; Zimmerman, Harry K.; and Douglas, George H., to William H. Rorer, Inc. Heterocyclic amidinoureas. 4,436,911, Cl. 546-291.000.
Stumpe, Werner, to Robert Bosch GmbH. Pressure medium brake system having a dual-valve control. 4,436,347, Cl. 303-6.00R.
Stutz, Herbert: *See—*
Zipp, Otmar; Bollmann, Heinz; Stutz, Herbert; and Scholz, Wolfgang, 4,436,869, Cl. 525-51.000.
Suchanski, Mary R.: *See—*
Branchick, Kenneth J.; Nalkin, Irving; and Suchanski, Mary R., 4,436,601, Cl. 204-149.000.
Suckow, Chris A.: *See—*
Roller, Philip C.; and Suckow, Chris A., 4,437,145, Cl. 362-306.000.
Sudarshan, E. C. George: *See—*
Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., 4,437,006, Cl. 250-363.00S.
Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG: *See—*
Nonnenmann, Manfred; and Deuschle, Steffi, 4,436,245, Cl. 236-49.000.
Sugama, Toshifumi; and Kukacka, Lawrence E., to United States of America, Energy. Magnesium phosphate glass cements with ceramic-type properties. 4,436,555, Cl. 106-85.000.

Sugawara, Katsuo: *See*—
Ohe, Etsuo; Sugawara, Katsuo; Tani, Ititaro; and Tsukioka, Hideo, 4,436,654, Cl. 252-574.000.

Suggitt, Robert M.: *See*—
Estabrook, Lawrence E.; and Suggitt, Robert M., 4,436,531, Cl. 48-197.00R.

Sugimoto, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Device for correcting torque detected by an electric dynamometer. 4,435,987, Cl. 73-862.170.

Sugitani, Hiroshi; Matsuda, Hiroto; and Ikeda, Masami, to Canon Kabushiki Kaisha. Ink-jet head and method for production thereof. 4,437,100, Cl. 346-1.100.

Sullivan, Daniel J.: *See*—
Logan, David J.; Webster, Ronald B.; and Sullivan, Daniel J., 4,435,904, Cl. 33-143.00K.

Sumi, Hideji; and Kokado, Masayuki, to Fujitsu Limited. Line driver circuit. 4,437,021, Cl. 307-270.000.

Sumimoto, Takashi: *See*—
Watanabe, Kenichi; and Sumimoto, Takashi, 4,436,175, Cl. 180-254.000.

Sumitomo Chemical Co., Ltd.: *See*—
Furukawa, Hiroshi; Saito, Yuichi; Imai, Akio; Yamamoto, Keisaku; Takao, Hiroyoshi; and Yoshida, Nobuyuki, 4,436,873, Cl. 525-314.000.

Sumitomo Electric Industries, Ltd.: *See*—
Kurosaki, Shiro, 4,436,542, Cl. 65-18.100.

Sumitomo Heavy Industries, Ltd.: *See*—
Mori, Takashi, 4,436,551, Cl. 75-12.000.

Sumner, Barbara E.: *See*—
Boyd, Phillip R.; Green, Gary K.; and Sumner, Barbara E., 4,436,580, Cl. 156-636.000.

Sumner, John H., to Burlington Industries, Inc. Method and apparatus for producing open-end-spun novelty yarns. 4,435,955, Cl. 57-409.000.

Sunbeam Corporation: *See*—
Carlson, Gordon S., 4,436,986, Cl. 219-505.000.

Sunbeam Plastics Corporation: *See*—
Gach, Peter P., 4,436,211, Cl. 215-216.000.

Suranyi, Gabriel G., to Western Electric Co., Inc. Peak voltage clamped power supply. 4,437,148, Cl. 363-89.000.

Surgical Design Corporation: *See*—
Banko, Anton, 4,436,091, Cl. 128-305.000.

Surgikos, Inc.: *See*—
Jacobs, Paul T., 4,436,754, Cl. 424-333.000.

Suzuki, Keizo: *See*—
Okudaira, Sadayuki; Saida, Hiroji; Sakai, Yoshio; Nishimatsu, Shigeru; and Suzuki, Keizo, 4,436,581, Cl. 156-643.000.

Suzuki, Kozaburo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Polaris axis finder. 4,436,421, Cl. 356-153.000.

Suzuki, Sunao; and Maeda, Koji, to Mitsubishi Denki Kabushiki Kaisha. Frequency detection system. 4,437,057, Cl. 324-78.00R.

Suzuki, Tetsuya: *See*—
Ebisawa, Masuo; and Suzuki, Tetsuya, 4,436,140, Cl. 164-120.000.

Suzuki, Tuneo: *See*—
Emura, Koji; Suzuki, Tuneo; and Kazama, Hidemichi, 4,436,685, Cl. 264-148.000.

Suzuki, Yasuo; Abe, Masaru; and Tezuka, Toshiro, to Bridgestone Tire Co., Ltd. Pneumatic radial tire having an excellent side-cut resistant property. 4,436,130, Cl. 152-353.00R.

Suzuki, Yasuo: *See*—
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, 4,436,724, Cl. 424-101.000.

Suzuki, Yoshiaki: *See*—
Okada, Yoshio; Suzuki, Yoshiaki; Murakami, Ryohei; and Segawa, Yoshiaki, 4,436,352, Cl. 312-228.000.

Suzuki, Yuichi; and Sano, Ichiro, to Furukawa Denchi Kabushiki Kaisha; and Furukawa Denki Kogyo Kabushiki Kaisha. Process and apparatus for manufacturing storage battery plates. 4,435,885, Cl. 29-2.000.

Suzuki, Yukio; Sato, Kunihiko; and Muramatsu, Motoyasu, to Toyota Jidosha Kabushiki Kaisha. Fuel injection control in an internal-combustion engine. 4,436,072, Cl. 123-488.000.

Svedberg, Per: *See*—
Jonsson, Per-Erik; and Svedberg, Per, 4,437,107, Cl. 357-38.000.

Swan, George A.: *See*—
Oyekan, Soni O.; and Swan, George A., 4,436,612, Cl. 208-65.000.

Sweeney, Roy: *See*—
Charis, Phillip S.; and Sweeney, Roy, 4,436,400, Cl. 354-296.000.

Swiatlowski, George: *See*—
Spletzer, Barry L.; and Swiatlowski, George, 4,436,470, Cl. 414-36.000.

Swift, John E., Sr., to Bethlehem Steel Corporation. Adaptor to facilitate testing of a lamp holder. 4,437,054, Cl. 324-51.000.

Swisher, William F., to Methode Electronics, Inc. Switch assemblies. 4,436,970, Cl. 200-61.560.

Swiss Aluminium Ltd.: *See*—
Fischer, Werner K., 4,436,607, Cl. 204-246.000.

SWS, Incorporated: *See*—
Nihen, Carl J., 4,436,979, Cl. 219-121.0LC.

Tabereaux, Alton T.; and Willett, John T., to Reynolds Metals Company. Alumina reduction cell. 4,436,598, Cl. 204-67.000.

Tachibana, Yakudo: *See*—
Sasaki, Takuma; Nakamichi, Kazuya; Tachibana, Yakudo; and Minami, Kiyoshi, 4,436,656, Cl. 260-112.00R.
Sasaki, Takuma; Nakamichi, Kazuya; Tachibana, Yakudo; and Minami, Kiyoshi, 4,436,657, Cl. 260-112.00R.

Taddicken, Hermann, to Eisele Apparate-und Geratebau GmbH. Attachment for feeding reinforcing back buttons to a sewing machine. 4,436,041, Cl. 112-110.000.

Taeger, Tilman: *See*—
Kreuzburg, Eberhard; Von Der Pahle, Dietrich J.; Monsheimer, Rolf; Pfleiderer, Ernst; and Taeger, Tilman, 4,436,624, Cl. 210-632.000.

Taira, Akio, to Olympus Optical Co., Ltd. Binocular stereo-microscope. 4,436,384, Cl. 350-515.000.

Taisho Pharmaceutical Co., Ltd.: *See*—
Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Kutaka; Ishigura, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,436,939, Cl. 568-813.000.

Taiyo Denko Kabushiki Kaisha: *See*—
Kashiwagi, Hidehiro, 4,436,104, Cl. 134-63.000.

Takada, Kinji: *See*—
Shimizu, Shigeo; Takano, Hiroyuki; Yoshimura, Shoji; and Takada, Kinji, 4,436,904, Cl. 544-27.000.

Takagi, Shigeru: *See*—
Tomita, Masahiro; and Takagi, Shigeru, 4,436,538, Cl. 55-482.000.

Takahara, Takeshi; Sato, Takeo; Itou, Takeo; and Tamatani, Masaaki, to Shibaura Denki Kabushiki Kaisha. Green-emitting phosphor for cathode-ray tube. 4,436,646, Cl. 252-301.40S.

Takahashi, Hirokuni: *See*—
Nishikawa, Yasuo; and Takahashi, Hirokuni, 4,436,678, Cl. 264-30.000.

Takahashi, Hirotake, to Honda Giken Kogyo Kabushiki Kaisha. Shaft drive apparatus for motorized two-wheeled vehicle. 4,436,173, Cl. 180-226.000.

Takahashi, Junichi; Sakane, Toshio; and Itoh, Yuji, to Canon Kabushiki Kaisha. Eye-fundus camera provided with automatic focusing function. 4,436,388, Cl. 351-206.000.

Takahashi, Katsuhiko: *See*—
Kasuga, Takuzo; Takahashi, Katsuhiko; and Nakashima, Tuneyasu, 4,436,877, Cl. 525-437.000.

Takahashi, Kensuke. Apparatus for cooking food and extracting smoke. 4,436,023, Cl. 99-400.000.

Takahashi, Masanori; and Uehara, Hidehiko, to Yamaha Hatsudoki Kabushiki Kaisha. Exhaust means for marine propulsion unit. 4,436,514, Cl. 440-89.000.

Takahashi, Nobuyuki; Furuno, Yoshikuni; and Fukunaga, Masaaki, to Nippon Steel Corporation. Press-formable high strength dual phase structure cold rolled steel sheet and process for producing the same. 4,436,561, Cl. 148-12.00F.

Takahashi, Yoshihiko: *See*—
Bando, Yoshihide; Tanaka, Toshiki; Honda, Sueaki; Takahashi, Yoshihiko; Tsuruyoshi, Kenichi; Kawashima, Katsumi; and Kishimoto, Syuichi, 4,437,078, Cl. 335-81.000.

Takamura, Yoshio; and Nakajima, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Rectifier circuit. 4,437,147, Cl. 363-61.000.

Takano, Hiroyuki: *See*—
Shimizu, Shigeo; Takano, Hiroyuki; Yoshimura, Shoji; and Takada, Kinji, 4,436,904, Cl. 544-27.000.

Takao, Hiroyoshi: *See*—
Furukawa, Hiroshi; Saito, Yuichi; Imai, Akio; Yamamoto, Keisaku; Takao, Hiroyoshi; and Yoshida, Nobuyuki, 4,436,873, Cl. 525-314.000.

Takeba, Kazuhiro: *See*—
Tanaka, Osamu; Takeba, Kazuhiro; Saita, Hiroshi; Matsushita, Yukinobu; and Koyabu, Koji, 4,436,563, Cl. 148-26.000.

Takeda Chemical Industries, Limited: *See*—
Furuoya, Itsuo; and Kitazawa, Yuzuru, 4,436,671, Cl. 260-465.300.
Horii, Satoshi; Fukase, Hiroshi; and Higashide, Eiji, 4,436,918, Cl. 548-546.000.
Imada, Isuke; Nagaoka, Akinobu; and Hirata, Minoru, 4,436,753, Cl. 424-331.000.

Takenaka Doboku Co., Ltd.: *See*—
Miura, Mituo; Kukino, Yoshinori; and Fujii, Takumi, 4,436,453, Cl. 405-263.000.

Takenaka Komuten Co., Ltd.: *See*—
Miura, Mituo; Kukino, Yoshinori; and Fujii, Takumi, 4,436,453, Cl. 405-263.000.

Takeno, Ryuko: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,436,921, Cl. 544-238.000.

Takeuchi, Atsushi, to Nippon Gakki Seizo Kabushiki Kaisha. Apparatus for controlling pickup arm in record or video disk player. 4,437,180, Cl. 369-217.000.

Takeuchi, Masato; Okada, Hideo; Tobita, Hirosi; Okabe, Sigeru; Matsuda, Shinpei; Tonami, Munehiko; Tamura, Kohki; and Nakajima, Fumito, to Hitachi, Ltd. Molten carbonate fuel cell. 4,436,794, Cl. 429-40.000.

Talley, Thomas H.; Sheets, Lee W.; and Wiley, Alvin F., to Schnadig Corporation. Spring suspension for sofa-bed. 4,435,860, Cl. 5-13.000.

Tallon, Jacques, to Compagnie Industrielle des Telecommunications. Helium leakage detector. 4,436,998, Cl. 250-288.000.

Tamagawa, Akira, to Olympus Optical Co. Ltd. Detecting particle agglutination with vessel having inclined, stepped bottom surface. 4,436,827, Cl. 436-534.000.

Tamama, Hiroshi; Ozawa, Yukio; Miyazaki, Jingo; Ito, Hiroshi; and Kinoshita, Toyohiro, to Japanese National Railways. Device for sealing a propeller shaft against invasion of sea water. 4,436,313, Cl. 277-80.000.

Tamatani, Masaaki: *See—*
Takahara, Takeshi; Sato, Takeo; Itou, Takeo; and Tamatani, Masaaki, 4,436,646, Cl. 252-301.40S.

Tamura, Kohki: *See—*
Takeuchi, Masato; Okada, Hideo; Tobita, Hirosi; Okabe, Sigeru; Matsuda, Shinpei; Tonami, Munehiko; Tamura, Kohki; and Nakajima, Fumito, 4,436,794, Cl. 429-40.000.

Tamura, Poohsan N.: *See—*
Rebholz, Joseph J.; and Tamura, Poohsan N., 4,436,370, Cl. 350-162.120.

Tanabe, Hiroyuki: *See—*
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, 4,436,772, Cl. 427-379.000.
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, 4,436,773, Cl. 427-380.000.

Tanaka, Hirokazu: *See—*
Umehara, Kazuyoshi; Tanaka, Hirokazu; Uchida, Itsuo; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,436,726, Cl. 424-177.000.

Tanaka, Kisaburoo: *See—*
Omae, Takashi; Tanaka, Kisaburoo; Aoki, Masahiro; Hirayama, Fumitoshi; and Izaki, Susumu, 4,436,554, Cl. 75-128.00T.

Tanaka, Nobuyoshi; Hashimoto, Seiji; and Kuwayama, Tetsuro, to Canon Kabushiki Kaisha. Solid-state color imaging apparatus. 4,437,112, Cl. 358-44.000.

Tanaka, Osamu; Takeba, Kazuhiro; Saita, Hiroshi; Matsushita, Yukinobu; and Koyabu, Koji, to Kabushiki Kaisha Kobe Seiko Sho. Flux for overlay welding. 4,436,563, Cl. 148-26.000.

Tanaka, Toshiaki; Ushimura, Shoji; and Etoh, Yukihiro, to Nissan Motor Company, Ltd. Engine cooling system. 4,436,060, Cl. 123-41.100.

Tanaka, Toshiki: *See—*
Bando, Yoshihide; Tanaka, Toshiki; Honda, Sueaki; Takahashi, Yoshihiko; Tsuruyoshi, Kenichi; Kawashima, Katsumi; and Kishimoto, Syuichi, 4,437,078, Cl. 335-81.000.

Tanaka, Yoshiharu: *See—*
Watabe, Akinori; Yonezawa, Susumu; and Tanaka, Yoshiharu, 4,437,177, Cl. 369-45.000.

Tandy Corporation: *See—*
Schreiber, Paul T., 4,436,956, Cl. 179-2.00C.

Tani, Ititaro: *See—*
Ohe, Etsuo; Sugawara, Katsuo; Tani, Ititaro; and Tsukioka, Hideo, 4,436,654, Cl. 252-574.000.

Taniguchi, Norihisa: *See—*
Yamamoto, Tsuyoshi; Taniguchi, Norihisa; Iida, Kazuyoshi; and Kondo, Yoshikazu, 4,436,179, Cl. 181-210.000.

Taniguchi, Yoshiharu; Edano, Shigeki; and Akiyama, Masanori, to Nihon Ceramic Co., Ltd. Pyroelectric infrared sensor. 4,437,002, Cl. 250-338.000.

Tanioka, Hiroshi: *See—*
Inuzuka, Tsuneki; Ishida, Masato; Tanioka, Hiroshi; and Sakamaki, Hisashi, 4,436,408, Cl. 355-14.00R.

Tassoni, Ronald L.: *See—*
Moore, Wilcy I.; and Tassoni, Ronald L., 4,436,617, Cl. 209-3.000.

Tatabanyai Szenbanyak: *See—*
Kapolyi, Laszlo, 4,436,550, Cl. 75-10.00R.

Taylor, Eric, to Paterson Products Limited. Tank with light-tight closure. 4,436,401, Cl. 354-312.000.

Taylor, Lyle H.: *See—*
Steinbruegge, Kenneth B.; Schruben, Johanna S.; and Taylor, Lyle H., 4,436,363, Cl. 350-1.600.

Taylor, Michael; and Withnall, Malcolm D. N., to Mars Limited. Apparatus for dispensing containers. 4,436,222, Cl. 221-223.000.

Taylor, Richard J.; Kellar, Paul R. N.; and Hinson, Neil R., to Micro Consultants Limited. Video picture processing apparatus and method. 4,437,121, Cl. 358-160.000.

Taylor, Wesley L. Magnetically coupled positive acting level control. 4,436,109, Cl. 137-413.000.

TDK Electronics Co., Ltd.: *See—*
Ohkawa, Takehisa; and Yoda, Kuniichi, 4,436,786, Cl. 428-447.000.

Technion Research and Development Foundation Ltd.: *See—*
Ron, Moshe; Kleiner, Matvei; and Navon, Uri, 4,436,539, Cl. 62-4.000.

Teijin Limited: *See—*
Urasaki, Takanori; Hirabayashi, Yasuji; Yoshida, Tugusi; and Inata, Hiroo, 4,436,894, Cl. 528-176.000.

Temple, William F.; and Daniels, Jesse, to Lilliston Corporation. Transverse flow fan rotor. 4,436,484, Cl. 416-178.000.

Templeman, Arthur R., to Peterson Manufacturing Co. Stud anchor for securing a hollow non-round extension base. 4,436,445, Cl. 403-189.000.

Tempo G: *See—*
Shigeru, Jhono, 4,435,963, Cl. 63-18.000.

Tension Envelope Corporation: *See—*
Berkley, E. Bertram, 4,436,202, Cl. 206-455.000.

Terada, Kazuhiro: *See—*
Matsuda, Fujio; Kato, Takazo; Honda, Tadatoshi; Terada, Kazuhiro; and Kogure, Yasuo, 4,436,916, Cl. 548-508.000.

Teraoka, Fuminori: *See—*
Matsui, Kenji; and Teraoka, Fuminori, 4,436,255, Cl. 242-107.40A.

Terrafix Erosion Control Products, Inc.: *See—*
Crowe, Robert E., 4,436,447, Cl. 405-76.000.

Terzian, Rouben T.: *See—*
Zaruba, John V.; and Terzian, Rouben T., 4,435,915, Cl. 46-12.000.

Tetenbaum, Marvin T.; and Crowley, Burlon C., to NL Industries, Inc. Thermally stable thickener. 4,436,862, Cl. 524-445.000.

Texaco Development Corporation: *See—*
Child, Edward T.; and Crouch, William B., 4,436,530, Cl. 48-197.00R.
Estabrook, Lawrence E.; and Suggitt, Robert M., 4,436,531, Cl. 48-197.00R.

Texaco Inc.: *See—*
Lin, Jiang-Jen, 4,436,837, Cl. 518-700.000.
Lin, Jiang-Jen, 4,436,838, Cl. 518-700.000.
Naylor, Carter G., 4,436,672, Cl. 260-512.00R.
Rowton, Richard L.; and Cuscurida, Michael, 4,436,843, Cl. 521-167.000.
Sanderson, John R.; Renken, Terry L.; and Watts, Lewis W., Jr., 4,436,926, Cl. 560-246.000.
Sanderson, John R.; and Watts, Lewis W., Jr., 4,436,927, Cl. 560-246.000.
Sanderson, John R.; Renken, Terry L.; and Watts, Lewis W., Jr., 4,436,928, Cl. 560-246.000.
Sanderson, John R.; and Watts, Lewis W., Jr., 4,436,929, Cl. 560-246.000.
Sanderson, John R.; and Watts, Lewis W., Jr., 4,436,930, Cl. 560-246.000.
Sanderson, John R.; Watts, Lewis W., Jr.; and Renken, Terry L., 4,436,931, Cl. 560-246.000.
Sanderson, John R.; Vanderpool, Steven H.; and Watts, Lewis W., Jr., 4,436,932, Cl. 560-246.000.
Sayles, Scott M.; Castagnos, Leonce F., Jr.; Schrader, Charles H.; Dillingham, Edward W.; and Scott, Richard P., deceased, 4,436,613, Cl. 208-74.000.
Umeda, Arihiko; and Iwase, Yoshiyuki, 4,436,891, Cl. 528-111.000.

Texas Instruments Incorporated: *See—*
Prokop, Jon S., 4,437,141, Cl. 361-403.000.

Textron Inc.: *See—*
Murphy, Milford R.; and Haskins, Delbert E., 4,436,018, Cl. 91-363.00A.

Tezuka, Toshiro: *See—*
Suzuki, Yasuo; Abe, Masaru; and Tezuka, Toshiro, 4,436,130, Cl. 152-353.00R.

Thal, Herbert L., Jr., to United States of America, Air Force. Equalizer cavity with independent amplitude control. 4,437,073, Cl. 333-28.00R.

Thalenfeld, David R., to Trion Industries Inc. Merchandise display hook. 4,436,209, Cl. 211-57.100.

Thalmann, Alfred; and Reich, Fritz, to Georg Fischer Aktiengesellschaft. Weld connection for plastic pipe. 4,436,987, Cl. 219-535.000.

Thibault, Thomas D., to Eli Lilly and Company. Thiadiazine herbicides. 4,436,549, Cl. 71-90.000.

Thiele, Kurt: *See—*
Molnar, Istvan; Thiele, Kurt; Geissmann, Felix; and Jahn, Ulrich, 4,436,913, Cl. 548-316.000.

Thiokol Corporation: *See—*
Bell, Frank H., 4,436,036, Cl. 102-367.000.

Thomas, John F., Jr.: *See—*
Wood, Denis; Thomas, John F., Jr.; and Dipper, Barry, 4,436,371, Cl. 350-281.000.

Thomas, William D., to Kidde, Inc. Pneumatic communication system for banking and the like. 4,436,456, Cl. 406-19.000.

Thomassen Amsterdam B.V.: *See—*
de Vries, Jan, 4,436,282, Cl. 251-329.000.

Thompson, Jerome B. Dough conditioning composition. 4,436,758, Cl. 426-549.000.

Thompson, Marvin J.: *See—*
Sawyer, Daniel D.; and Thompson, Marvin J., 4,437,155, Cl. 364-200.000.

Thompson, Thomas K.: *See—*
Pellegrin, Michael T.; Hanna, Terry J.; and Thompson, Thomas K., 4,436,541, Cl. 65-2.000.

Thomson-CSF: *See—*
Cohen, Georges; and Heroux, Jean, 4,437,074, Cl. 333-128.000.
Darmouni, Corinne, 4,437,075, Cl. 333-167.000.
Henry, Raymond; and Heitzmann, Michel, 4,437,077, Cl. 333-245.000.
Hunaut, Roger; and Dupont, Francois, 4,437,110, Cl. 358-41.000.
Le Sonn, Marcel, 4,437,188, Cl. 378-205.000.
Picquendar, Jean E., 4,437,068, Cl. 329-105.000.
Raverdy, Claude Y.; and Veron, Serge, 4,437,035, Cl. 313-388.000.
Rougeolle, Daniel, 4,437,071, Cl. 331-1.00A.

Thomson-CSF Broadcast, Inc.: *See—*
Kruger, Robert A., 4,436,095, Cl. 128-654.000.

Thorburn Technics (International) Limited: *See—*
Donnelly, Bernard J., 4,437,062, Cl. 324-238.000.

Thorud, Stanley R., to Liberty Carton Co. Flat-file. 4,436,354, Cl. 312-259.000.

Thuener, Bruce W.: *See—*
Allen, Fred E.; Thuener, Bruce W.; and Shadinger, Peter R., 4,436,500, Cl. 425-290.000.

Tieleman, Rudolf J. Poultry eviscerating tool. 4,435,878, Cl. 17-11.000.

Tight, Dexter C., Jr., to Raychem Corporation. Re-enterable closure. 4,436,566, Cl. 156-56.000.

Tinder, Richard: *See—*
Simmons, William J.; and Tinder, Richard, 4,436,404, Cl. 355-3.0SH.

Ting Enterprises, Inc.: *See—*
Evans, Jeffrey L., 4,436,080, Cl. 126-139.000.

Tioxide Group PLC: *See—*
Hare, Alan L.; and George, Allan P., 4,436,984, Cl. 219-383.000.

Tishura, Vladimir I.: *See*—
Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; Galian, Boris A.; Asoyants, Grigory B.; and Tishura, Vladimir I., 4,436,974, Cl. 219-66.000.

Tkotz, Gunter: *See*—
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, 4,436,680, Cl. 264-60.000.

TMC Corporation: *See*—
Wittmann, Heinz; and Konwitza, Vladimir, 4,436,322, Cl. 280-614.000.

Toa Paint Co., Ltd.: *See*—
Kitano, Masao, 4,436,845, Cl. 523-172.000.

Tobback, Hubert J.: *See*—
Viellefont, Jean F.; Hens, Carolus M.; and Tobback, Hubert J., 4,436,606, Cl. 204-225.000.

Tobita, Hirosi: *See*—
Takeuchi, Masato; Okada, Hideo; Tobita, Hirosi; Okabe, Sigeru; Matsuda, Shinpei; Tonami, Munehiko; Tamura, Kohki; and Nakajima, Fumito, 4,436,794, Cl. 429-40.000.

Toch, Theodore H.: *See*—
Beliotti, Marc; Goldhaber, Richard P.; Phillips, Earl G.; and Toch, Theodore H., 4,436,620, Cl. 210-90.000.

Toda, Minoru: *See*—
Osaka, Susumu; and Toda, Minoru, 4,435,920, Cl. 49-82.000.

Toga, Yuzo: *See*—
Okamoto, Ichiro; and Toga, Yuzo, 4,436,896, Cl. 156-332.000.

Tokuhisa, Masaaki; and Hirai, Yukio, to Kawasaki Steel Corporation. Basic bonded fluxes for submerged arc welding having an excellent removability of slag at a narrow groove. 4,436,562, Cl. 148-24.000.

Tokyo Kogaku Kikai Kabushiki Kaisha: *See*—
Aoki, Mitsugu, 4,436,390, Cl. 351-234.000.
Sano, Eiichi, 4,436,389, Cl. 351-208.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Hirose, Kenji, 4,437,127, Cl. 358-296.000.
Masuoka, Fujio, 4,437,172, Cl. 365-182.000.
Masuoka, Fujio, 4,437,174, Cl. 365-218.000.
Nakaya, Shunichi; and Araoka, Katsumasa, 4,437,016, Cl. 290-1.00R.
Noji, Takashi; Hapao, Norio; and Obata, Yoshiharu, 4,437,011, Cl. 250-486.100.
Takamura, Yoshio; and Nakajima, Akira, 4,437,147, Cl. 363-61.000.

Tomino, Naoki; Ikeda, Osamu; Matsuzawa, Yoshio; and Inoue, Hideya, to Nippon Kogaku K.K. Container device for planar battery. 4,436,792, Cl. 429-1.000.

Tomita, Masahiro; and Takagi, Shigeru, to Nippon Soken, Inc. Filter for cleaning exhaust gases from diesel engine. 4,436,538, Cl. 55-482.000.

Tompsett, Alan J., to Imperial Chemical Industries PLC. Manufacture of amines. 4,436,938, Cl. 564-474.000.

Tomy Kogyo Co., Inc.: *See*—
Iwao, Noriaki; and Abe, Akira, 4,435,916, Cl. 46-201.000.

Tonami, Munehiko: *See*—
Takeuchi, Masato; Okada, Hideo; Tobita, Hirosi; Okabe, Sigeru; Matsuda, Shinpei; Tonami, Munehiko; Tamura, Kohki; and Nakajima, Fumito, 4,436,794, Cl. 429-40.000.

Tone, Junsuke: *See*—
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,436,747, Cl. 424-274.000.

Tonon, Elia: *See*—
Perdomini, Luciano; Tonon, Elia; and Paronetto, Lanfranco, 4,436,755, Cl. 426-15.000.

Toth, Ferenc: *See*—
Ferenczi, Gyorgy; Horvath, Peter; Toth, Ferenc; Kiss, Jozsef; and Boda, Janos, 4,437,060, Cl. 324-158.00D.

Towae, Friedrich: *See*—
Harder, Wolfgang; Merger, Franz; and Towae, Friedrich, 4,436,668, Cl. 260-463.000.

Toyama Chemical Co., Ltd.: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,436,921, Cl. 544-238.000.

Toyo Kogyo Co., Ltd.: *See*—
Hata, Shuji; Yamada, Toshio; and Murakawa, Katsuji, 4,435,994, Cl. 74-606.00R.
Watanabe, Kenichi; and Sumimoto, Takashi, 4,436,175, Cl. 180-254.000.

Toyo Soda Manufacturing Co., Ltd.: *See*—
Isowa, Yoshikazu; Ohmori, Muncki; Mori, Kaoru; Ichikawa, Tetsuya; Nonaka, Yuji; Kihara, Keiichi; Oyama, Kiyotaka; Satoh, Heijiro; and Nishimura, Shigeaki, 4,436,925, Cl. 560-19.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Akagi, Motonobu; Nomura, Isshi; Hattori, Kyo; and Kato, Kichiro, 4,436,070, Cl. 123-440.000.
Nakamura, Norihiko; and Shibata, Yoshiaki, 4,436,068, Cl. 123-310.000.
Suzuki, Yukio; Sato, Kunihiko; and Muramatsu, Motoyasu, 4,436,072, Cl. 123-488.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Miyagi, Hideo, 4,436,073, Cl. 123-491.000.
Nakakobara, Takeshi; Sakaguchi, Kiyoshi; Ueda, Fumio; and Murase, Hiroyuki, 4,436,062, Cl. 123-90.270.
Nakatsuka, Hirotaka; Mizuno, Toshiaki; Yamazoe, Hisamitsu; and Matsuoka, Hiroki, 4,436,074, Cl. 123-492.000.
Sawabe, Masaki; and Kumagai, Tadanobu, 4,436,310, Cl. 277-11.000.

Transidyne General Corporation: *See*—
Enzer, Steven E.; and Sarrine, Robert J., 4,436,610, Cl. 204-400.000.

Trapp, Kenneth: *See*—
Santa Lucia, Jack; and Trapp, Kenneth, 4,436,249, Cl. 242-18.00R.

Trasavage, Robert K.: *See*—
Rendulic, Francis J.; Trasavage, Robert K.; and Boduch, Paul A., 4,436,806, Cl. 430-311.000.

Triebskorn, Bruno: *See*—
Broecker, Franz J.; Gruendler, Karl-Heinz; Marosi, Laszlo; Schwarzmann, Matthias; Triebskorn, Bruno; and Zirker, Guenter, 4,436,833, Cl. 502-176.000.

Trilling, David M.; and Smadar, Yechiel, to Caribou Fisheries, Inc. Production of shaped food products. 4,436,759, Cl. 426-573.000.

Trion Industries Inc.: *See*—
Thalenfeld, David R., 4,436,209, Cl. 211-57.100.

Trommen, Hartmut: *See*—
Rother, Bruno; and Trommen, Hartmut, 4,436,781, Cl. 428-365.000.

Truck-Lite Company, Inc.: *See*—
Roller, Philip C.; and Suckow, Chris A., 4,437,145, Cl. 362-306.000.

Trybulski, Eugene J.: *See*—
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,436,662, Cl. 260-245.700.

Tsai, Tsu-Tzu; and Arnold, Fred E., to United States of America, Air Force. 2-Phenylbanzothiazole polymers. 4,436,886, Cl. 526-257.000.

Tsuda, Hisatsugu: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,436,921, Cl. 544-238.000.

Tsuda, Kinji, to Elephant Chain Block Company Limited. Hand operated hoist having improved means controlling free rotation of a load sheave. 4,436,333, Cl. 294-82.00R.

Tsuji, Nobuhiko: *See*—
Endoh, Koichi; Tsuji, Nobuhiko; Nakamura, Keijiroh; Hamada, Toshiyoshi; and Ishida, Keiichi, 4,436,812, Cl. 435-14.000.

Tsukioka, Hideo: *See*—
Ohe, Etsuo; Sugawara, Katsuo; Tani, Ititaro; and Tsukioka, Hideo, 4,436,654, Cl. 252-574.000.

Tsukishima Kikai Co., Ltd.: *See*—
Yamaguchi, Katsunobu; Matsuoka, Seiichi; Hayashida, Takayuki; and Hayase, Tomio, 4,436,532, Cl. 48-209.000.

Tsuruyoshi, Kenichi: *See*—
Bando, Yoshihide; Tanaka, Toshiki; Honda, Sueaki; Takahashi, Yoshihiko; Tsuruyoshi, Kenichi; Kawashima, Katsumi; and Kishimoto, Syuichi, 4,437,078, Cl. 335-81.000.

Tsushima, Rikio: *See*—
Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, 4,436,722, Cl. 424-70.000.

Tsuyama, Yoshito; Shimazaki, Yasumi; Kakita, Kazutoshi; and Hirokawa, Toshio, to Nippon Steel Corporation. Method and apparatus for manufacturing spiral pipe. 4,436,239, Cl. 228-17.000.

Tuchenhagen, Otto A. P.; Mieth, Hans O. E.; and Coura, Herbert R., to Otto Tuchenhagen GmbH & Co. KG. Pipeline switch with leakage control and cleanable leakage cavity. 4,436,106, Cl. 137-240.000.

Tucker, Hartwell F.: *See*—
Tucker, Jeffery R.; Ross, Dennis W.; and Tucker, Hartwell F., 4,435,870, Cl. 15-98.000.

Tucker, Jeffery R.; Ross, Dennis W.; and Tucker, Hartwell F. Floor machine. 4,435,870, Cl. 15-98.000.

Tucker, Myron B. Portable storage device and table. 4,436,353, Cl. 312-241.000.

Tullos, Robert N.; and Ostroff, Arthur, to Minnesota Mining and Manufacturing Company. Stepper motor controller. 4,437,049, Cl. 318-696.000.

Turillon, Pierre P., to MPD Technology Corporation. Modular hydride container. 4,436,537, Cl. 55-387.000.

Turner, Frederick T.: *See*—
Harra, David J.; Turner, Frederick T.; and Hutchinson, Martin A., 4,436,602, Cl. 204-192.00R.

Twinoak Products, Inc.: *See*—
Meloy, Gilbert K., 4,435,857, Cl. 4-228.000.

Tyszkiewicz, Theodore J.: *See*—
Boden, Richard M.; Tyszkiewicz, Theodore J.; and Watkins, Hugh, 4,436,652, Cl. 252-522.00R.

Uchida, Itsuo: *See*—
Umehara, Kazuyoshi; Tanaka, Hirokazu; Uchida, Itsuo; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,436,726, Cl. 424-177.000.

Ueda, Fumio: *See*—
Nakakobara, Takeshi; Sakaguchi, Kiyoshi; Ueda, Fumio; and Murase, Hiroyuki, 4,436,062, Cl. 123-90.270.

Uehara, Hidehiko: *See*—
Takahashi, Masanori; and Uehara, Hidehiko, 4,436,514, Cl. 440-89.000.

Ueno, Kenji: *See*—
Ushioda, Minoru; Ueno, Kenji; Furukawa, Hiroyasu; and Kobayashi, Masahiro, 4,436,861, Cl. 524-425.000.

Ueno, Ryuzo; Sakota, Kazuyuki; Kawata, Keiji; and Naito, Yoshiyuki, to Kabushiki Kaisha Veno Seiyaku Oyokenkyuso. Process for producing hydroxybenzonitriles. 4,436,670, Cl. 260-465.00B.

Ukigai, Toshiyuki: *See*—
Yamamura, Masaaki; Igarashi, Taizo; and Ukigai, Toshiyuki, 4,436,527, Cl. 44-51.000.

Umeda, Arihiko; and Iwase, Yoshiyuki, to Texaco Inc. Modified polyoxyalkylenepolyamine curing agents for epoxy resins. 4,436,891, Cl. 528-111.000.

Umeda, Tadashi: *See*—
Miyoshi, Hideo; Umeda, Tadashi; and Aoki, Takashi, 4,436,411, Cl. 355-14.00D.

Umehara, Kazuyoshi; Tanaka, Hirokazu; Uchida, Itsuo; Kohsaka, Masanobu; and Imanaka, Hiroshi, to Fujisawa Pharmaceutical Co., Ltd. N-Acylpeptide compound, processes for the preparation thereof and the pharmaceutical compositions. 4,436,726, Cl. 424-177.000.

Umeyama, Koichi: *See*—
Aihara, Tetsuo; Nakayama, Yasuharu; Umeyama, Koichi; Sawada, Kozo; and Shinohara, Masaaki, 4,436,849, Cl. 523-501.000.

Umezu, Hiroaki; Kishi, Akira; and Yamagami, Hiroshi, to Misawa Homes K.K. Modular building structure and module for it. 4,435,927, Cl. 52-79.130.

Unger, Gotz W., to Knoll International, Inc. Assembly for holding and tensioning a webbing. 4,435,882, Cl. 24-265.00R.

Union Carbide Corporation: *See*—
Andreini, Rockne J.; Mehlman, Stewart K.; Selines, Ronald J.; and Agrawal, Balkishan. 4,436,553, Cl. 75-52.000.
Hodakowski, Leonard E.; and Wilson, Charles A., II, 4,436,736, Cl. 424-211.000.
Scott, Robert J., 4,436,642, Cl. 252-95.000.
Sheads, Richard E.; and Segal, David A., 4,436,665, Cl. 260-404.000.
Smolarek, James, 4,436,146, Cl. 165-111.000.
Wheeler, Thomas N., 4,436,666, Cl. 260-455.00B.

Union Siderurgique du Nord et de l'Est de la France: *See*—
Bocquet, Jacques; and Werquin, Jean C., 4,436,791, Cl. 428-682.000.

Union Special Corporation: *See*—
Bonham, Richard T.; Sigiols, John P.; and Dinkelacker, Paul H., 4,436,045, Cl. 112-313.000.
Nordstrom, Eric W.; and Manoski, Laurence A., 4,436,044, Cl. 112-286.000.

United States of America
Air Force: *See*—
Beggs, William R.; and Crane, Barry D., 4,436,437, Cl. 374-32.000.
Cummings, Robert J., 4,436,262, Cl. 244-122.0AG.
Donelan, Edward J., 4,436,260, Cl. 244-3.160.
Ekin, John W.; Gavaler, John R.; and Braginski, Aleksander I., 4,437,080, Cl. 335-216.000.
Ekin, John W.; Gavaler, John R.; and Braginski, Aleksander I., 4,437,080, Cl. 335-216.000.
Lee, David R.; and McCreary, Robert B., 4,437,113, Cl. 358-93.000.
Simmons, Louis D., 4,436,220, Cl. 220-359.000.
Thal, Herbert L., Jr., 4,437,073, Cl. 333-28.00R.
Tsai, Tsu-Tzu; and Arnold, Fred E., 4,436,886, Cl. 526-257.000.
Army: *See*—
Boyd, Phillip R.; Green, Gary K.; and Sumner, Barbara E., 4,436,580, Cl. 156-636.000.
Mayo, Henry C.; and Korzendorfer, Joseph E., 4,436,330, Cl. 292-263.000.
Energy: *See*—
Bryan, James B., 4,435,905, Cl. 33-181.00R.
Demirjian, Ara M.; and Solbes, Albert, 4,437,026, Cl. 310-11.000.
Hondorp, Hugh L., 4,437,013, Cl. 250-515.100.
Huggins, Robert A.; and Boukamp, Bernard A., 4,436,796, Cl. 429-112.000.
Jardin, Stephen C.; Yamada, Masaaki; Furth, Harold P.; and Okabayashi, Mitcheo, 4,436,691, Cl. 376-137.000.
Lewandowski, Edward F.; and Vrabec, John, 4,437,034, Cl. 313-348.000.
Overton, William C., Jr.; and Steyert, William A., Jr., 4,437,064, Cl. 324-346.000.
Russak, Michael A., 4,436,558, Cl. 148-1.500.
Shiue, Chyng-Yann; and Wolf, Alfred P., 4,436,717, Cl. 424-1.100.
Sugama, Toshifumi; and Kukacka, Lawrence E., 4,436,555, Cl. 106-85.000.
Wood, Richard F.; and Young, Rosa T., 4,436,557, Cl. 148-1.500.
National Aeronautics and Space Administration: *See*—
Kleinberg, Leonard L., 4,437,069, Cl. 330-109.000.
Navy: *See*—
Ante, Louis E.; Lindquist, Richard A.; and Roeschlein, Eugene R., 4,436,049, Cl. 114-254.000.
Cole, James H., 4,436,425, Cl. 356-361.000.
Hudson, John A., 4,437,097, Cl. 340-852.000.
McKenzie, Joe A.; and Lowe, Gary D., 4,437,067, Cl. 328-167.000.
Miles, Melvin H.; and Fine, Dwight A., 4,436,590, Cl. 204-1.00T.
Somerfleck, Harold H., 4,436,569, Cl. 156-217.000.
Williams, Ralph E., 4,436,766, Cl. 427-96.000.

U.S. Philips Corporation: *See*—
de Wilde, Johannes, 4,435,900, Cl. 29-603.000.
Horl, Manfred, 4,437,070, Cl. 330-254.000.
Joormann, Hendrik J. M.; Verweij, Hendrik; and Haisma, Jan, 4,436,381, Cl. 350-432.000.
Mrazek, Gustav; and Obenaus, Franz, 4,437,105, Cl. 346-140.00R.
Singer, Barry M., 4,437,118, Cl. 358-113.000.

United States Steel Corporation: *See*—
Boodman, Norman S.; Farr, Elvin L.; Osterholm, Robert J.; and Green, Neulan B., III, 4,436,615, Cl. 208-177.000.
Chang, Melvin C.; and Howell, John L., 4,436,552, Cl. 75-41.000.

United Technologies Corporation: *See*—
Stetson, Karl A.; and Harrison, Irene R., 4,436,419, Cl. 356-35.500.

Universal Gesellschaft fur Umwelttechnik mbH: *See*—
Kreuzburg, Eberhard; Von Der Pahle, Dietrich J.; Monsheimer, Rolf; Pfleiderer, Ernst; and Taeger, Tilman, 4,436,624, Cl. 210-632.000.

University of Nebraska, The Board of Regents of the: *See*—
Erickson, Eric D., 4,436,700, Cl. 422-102.000.

University of Toledo, The: *See*—
Raftopoulos, Demetrios D., 4,436,099, Cl. 128-782.000.

Uno, Masahiro: *See*—
Watanabe, Atsuo; and Uno, Masahiro, 4,436,428, Cl. 356-432.000.

UPA Technology, Inc.: *See*—
Weinstock, Jacques, 4,437,000, Cl. 250-308.000.

Urano, Haruya: *See*—
Nakamura, Hiromichi; Urano, Haruya; Kojima, Tatsuo; and Sekiwa, Mitsunao, 4,436,006, Cl. 83-13.000.

Urasaki, Takanori; Hirabayashi, Yasuji; Yoshida, Tugusi; and Inata, Hiroo, to Teijin Limited. Novel wholly aromatic copolyester, process for production thereof, and film melt-shaped therefrom. 4,436,894, Cl. 528-176.000.

Urbanek, Friedrich: *See*—
Strehler, Hugo; Hoerauf, Werner; and Urbanek, Friedrich, 4,436,897, Cl. 528-323.000.

Urquhart, John; Chandrasekaran, Santosh K.; and Shaw, Jane E., to ALZA Corporation. Method for administering scopolamine transdermally. 4,436,741, Cl. 424-267.000.

Ushikoshi, Kenichi, to Kabushiki Kaisha Suwa Seikosha. Analog and digital display timepiece. 4,436,435, Cl. 368-71.000.

Ushimura, Shoji: *See*—
Tanaka, Toshiaki; Ushimura, Shoji; and Etoh, Yukihiro, 4,436,060, Cl. 123-41.100.

Ushioda, Minoru; Ueno, Kenji; Furukawa, Hiroyasu; and Kobayashi, Masahiro, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Polyvinyl chloride containing alkyl acrylate and alkyl methacrylate sequentially polymerized thereon. 4,436,861, Cl. 524-425.000.

USM Corporation: *See*—
Berrill, William H.; Boot, Herbert W.; and Hartshorn, Frank, 4,435,869, Cl. 12-12.000.
Simmonds, Robert C., Jr.; and Gilbride, Andrew J., 4,436,771, Cl. 427-284.000.

Usui Kokusai Sangyo Kabushiki Kaisha: *See*—
Usui, Masayoshi, 4,436,063, Cl. 123-90.610.

Usui, Masayoshi, to Usui Kokusai Sangyo Kabushiki Kaisha. Push rod for operating an intake or exhaust valve of an internal combustion engine. 4,436,063, Cl. 123-90.610.

Vahlensieck, Hans-Joachim: *See*—
Blumcke, Alfred; Fischer, Peter; and Vahlensieck, Hans-Joachim, 4,436,823, Cl. 436-169.000.

Vaillant, Robert: *See*—
Ninet, Jean-Louis; and Vaillant, Robert, 4,436,454, Cl. 405-204.000.

Valenti, Salvatore, to Sandoz Ltd. After treating composition for direct or reactive dyeings on cellulose. 4,436,524, Cl. 8-551.000.

Valentine, John M. Apparatus for cutting fusible material. 4,436,010, Cl. 83-171.000.

VALEO: *See*—
Bertin, Patrice, 4,436,171, Cl. 180-148.000.

Vance, Ershell C. Universally positionable low profile mine drilling machine and method. 4,436,455, Cl. 405-303.000.

van den Bemt, Johannes C., to Estel Hoogovens BV. Ceramic burner for gas, particularly for a hot-blast stove for a blast furnace. 4,436,508, Cl. 432-214.000.

van der Lely, Cornelis. Soil cultivating implements. 4,436,161, Cl. 172-49.500.

Vanderpool, Steven H.: *See*—
Sanderson, John R.; Vanderpool, Steven H.; and Watts, Lewis W., Jr., 4,436,932, Cl. 560-246.000.

Vanderwerf, Dennis F., to Minnesota Mining and Manufacturing Company. Distortion correction for an overhead projector system. 4,436,392, Cl. 353-38.000.

Vanderwerf, Dennis F., to Minnesota Mining and Manufacturing Company. Distortion correction for an overhead projector system. 4,436,393, Cl. 353-38.000.

van Doorne, Hubertus J., deceased (by van Doorne, Martinus P. J. H., executor), to Erven Dr. Hubertus Josephus van Doorne. Automatic continuously variable transmission. 4,435,997, Cl. 74-796.000.

van Doorne, Martinus P. J. H., executor: *See*—
van Doorne, Hubertus J., deceased, 4,435,997, Cl. 74-796.000.

van Helden, Robert: *See*—
Baardman, Frank; van Helden, Robert; and de Nie-Sarink, Margaretha J., 4,436,937, Cl. 564-409.000.

Vanlerberghe, Guy: *See*—
Kalopissis, Gregoire; and Vanlerberghe, Guy, 4,436,909, Cl. 546-248.000.

van Mullekom, Hubert P., to Ruti-te Strake, B.V. Device for inserting a thread into the weaving shed of a pneumatic weaving machine by means of a flowing fluid. 4,436,122, Cl. 139-435.000.

Vann, Roy R.; and George, Flint R., to Geo Vann, Inc. Method for controlling subsurface blowout. 4,436,154, Cl. 166-281.000.

van Ouwerkerk, Wouter C., to Saueressig GmbH. Rotary screen printing apparatus. 4,436,032, Cl. 101-120.000.

van 't Slot, Kornelis, to Moba Holding Barneveld B.V. Modelling or packing device for fowl. 4,435,879, Cl. 17-11.000.

Van Vliet, James G.; and Brown, James R., to Beckman Instruments, Inc. Photomultiplier detector protection device and method. 4,436,994, Cl. 250-207.000.

Varela-Hernandez, Arturo G. Tensed wire suspension system. 4,436,284, Cl. 256-35.000.

Varian Associates, Inc.: *See*—
Harra, David J.; Turner, Frederick T.; and Hutchinson, Martin A., 4,436,602, Cl. 204-192.00R.

Vary, Philip. Hydro-turbine device for generating electricity. 4,436,480, Cl. 415-2.00R.

Vassalotti, Michael; and Obligado, Alvaro, to Automation Industries, Inc. Nuclear reactor cavity decontamination machine. 4,436,694, Cl. 376-310.000.

Vaughn, Howard A., Jr., to General Electric Company. Silicone resin coating composition containing an ultraviolet light absorbing agent. 4,436,851, Cl. 524-43.000.

Vayda, Adam V.: *See*—
Morganson, Neal E.; and Vayda, Adam V., 4,436,947, Cl. 585-525.000.

VDO Adolf Schindling AG: *See*—
Collonia, Harald, 4,436,069, Cl. 123-339.000.

Veco Beheer B.V.: *See*—
de Hek, Johan A., 4,436,591, Cl. 204-11.000.

Veith, Werner, to Siemens Aktiengesellschaft. Flat cathode ray tube and method of operation. 4,437,044, Cl. 315-366.000.

Veitscher Magnesitwerke-Actien-Gesellschaft: *See*—
Horak, Josef, 4,436,144, Cl. 165-9.100.

Venetti, Mark: *See*—
Jaquay, Louis H.; and Venetti, Mark, 4,436,611, Cl. 208-11.00R.

Vereinigte Deutsch Metallwerke AG: *See*—
Prinz, Bruno; Rockel, Manfred B.; Rudolph, Gunther; Heubner, Ulrich; and Zoebe, Hugo, 4,436,790, Cl. 428-675.000.

Veres, Albert: *See*—
Kaderjak, Gyula; Veres, Albert; Barkoczy, Istvan; and Lonsesak, Janos, 4,436,954, Cl. 174-128.00R.

Vereschaka, Anatoly S.: *See*—
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; and Sinelschikov, Andrei K., 4,436,830, Cl. 501-96.000.

Verhagen, Laurentius A. M.; and Warnaar, Leendert G., to Lever Brothers Company. Low-caloric spread based on a low-melting butterfat fraction. 4,436,760, Cl. 426-603.000.

Veron, Serge: *See*—
Raverdy, Claude Y.; and Veron, Serge, 4,437,035, Cl. 313-388.000.

Verweij, Hendrik: *See*—
Joormann, Hendrik J. M.; Verweij, Hendrik; and Haisma, Jan, 4,436,381, Cl. 350-432.000.

Vichkanova, Serafima A.; Shipulina, Ljudmila D.; Glyzin, Vladimir I.; Bankovsky, Alexandr I.; Pimenov, Mikhail G.; and Boryaev, Klim I. Medicated compound for treating diseases infected by virus of the herpes group. 4,436,732, Cl. 424-180.000.

Victor Company of Japan Limited: *See*—
Inaba, Shosei, 4,436,201, Cl. 206-444.000.
Kishima, Yukihiro, 4,437,181, Cl. 369-244.000.
Nishihara, Yoshiki; and Miyamoto, Kazumichi, 4,436,683, Cl. 264-107.000.

Vielleton, Jean F.; Hens, Carolus M.; and Tobback, Hubert J., to Metallurgie Hoboken-Overpelt. Electrolysis apparatus. 4,436,606, Cl. 204-225.000.

Voest-Alpine Aktiengesellschaft: *See*—
Kilches, Helmut D.; Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, 4,436,290, Cl. 266-158.000.
Riegler, Ernst; and Zajicek, Ernst, 4,437,187, Cl. 373-73.000.

Vogt, James A.: *See*—
Cullen, John S.; incorvia, Samuel A.; and Vogt, James A., 4,436,623, Cl. 210-282.000.

Voigtlander, Wolfgang: *See*—
Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Neubert, Peter, 4,436,735, Cl. 424-182.000.

Voigtsberger, Carl-Alexander: *See*—
Fuchs, Helmut V.; Schupp, Gerold; and Voigtsberger, Carl-Alexander, 4,435,974, Cl. 73-40.50A.

Voirin, Robert: *See*—
Kvasnikoff, Georges; and Voirin, Robert, 4,436,716, Cl. 423-574.00R.

Vollmer Werke Maschinenfabrik GmbH: *See*—
Lenard, Peter; and Beck, Ernst, 4,436,000, Cl. 76-41.000.

Von Der Pahle, Dietrich J.: *See*—
Kreuzburg, Eberhard; Von Der Pahle, Dietrich J.; Monsheimer, Rolf; Pfleiderer, Ernst; and Taeger, Tilman, 4,436,624, Cl. 210-632.000.

Vonnegut, George L., to General Motors Corporation. Turbine wheel with integral DS blades and equiaxed hub. 4,436,485, Cl. 416-241.00R.

Voplex Corporation: *See*—
Donahue, Gordon J., 4,436,276, Cl. 249-91.000.

Vornberger, George F.; and Crutcher, John P., to Senco Products, Inc. Automatic firing system for pneumatic tools. 4,436,237, Cl. 227-130.000.

Vossieck, Paul, to Goetze AG. Slide ring seal with spring to radially bias in opposite radial directions. 4,436,314, Cl. 277-86.000.

Voznick, Henry P., to Wahl Instruments, Inc. Multiple probe temperature measuring system and probes therefor. 4,436,438, Cl. 374-165.000.

Vrabec, John: *See*—
Lewandowski, Edward F.; and Vrabec, John, 4,437,034, Cl. 313-348.000.

W. R. Grace & Co.: *See*—
Gokel, George W., 4,436,664, Cl. 260-330.600.
Rendulic, Francis J.; Trasavage, Robert K.; and Boduch, Paul A., 4,436,806, Cl. 430-311.000.

Wachi, Hiroshi: *See*—
Kokura, Satoshi; Nihei, Masayasu; Wachi, Hiroshi; Mashida, Hiromi; and Senda, Kousaku, 4,436,982, Cl. 219-130.510.

Wacker-Chemie GmbH: *See*—
Huhn, Karl; and Marwitz, Heinrich, 4,436,856, Cl. 524-211.000.
Pirson, Ewald; Schmidlkofer, Jakob; and Innertsberger, Ernst, 4,436,647, Cl. 252-358.000.

Wacyk, Ihor T., to RCA Corporation. Actively controlled input buffer. 4,437,024, Cl. 307-475.000.

Wada, Satoshi: *See*—
Sakamoto, Noboru; Yamashita, Itaru; Wada, Satoshi; Yano, Kenichi, and Oda, Suehiro, 4,436,981, Cl. 219-124.320.

Wada, Tomio: *See*—
Funada, Fumiaki; Kozaki, Syuichi; Matsuura, Masataka; and Wada, Tomio, 4,436,379, Cl. 350-347.00E.
Yano, Kohzo; Hamada, Hiroshi; Inami, Yasuhiko; and Wada, Tomio, 4,436,380, Cl. 350-357.000.

Wada, William T.: *See*—
Gentry, Larry L.; Moss, Herbert H.; Panicker, Narayana N.; and Wada, William T., 4,436,048, Cl. 114-230.000.

Wagner, Manfred: *See*—
Erdmannsdorfer, Hans; Wagner, Manfred; and Weyh, Gerd, 4,436,535, Cl. 55-96.000.

Wagner, Melvin P., to PPG Industries, Inc. Rubber compositions. 4,436,847, Cl. 523-203.000.

Wahl Instruments, Inc.: *See*—
Voznick, Henry P., 4,436,438, Cl. 374-165.000.

Waldemar Link GmbH & Co.: *See*—
Keller, Arnold, 4,435,854, Cl. 3-1.913.

Waldmann, Helmut: *See*—
Rauleder, Gebhard; and Waldmann, Helmut, 4,436,943, Cl. 585-357.000.

Walker, Donald R.: *See*—
Mitchell, Hal D.; and Walker, Donald R., 4,435,851, Cl. 2-2.000.

Walker, Graham: *See*—
O'Hanlon, Peter J.; and Walker, Graham, 4,436,751, Cl. 424-283.000.

Walker, Thad O.; and Matthews, Patricia C., to Exxon Research & Engineering Co. Additive composition for release of stuck drill pipe. 4,436,638, Cl. 252-8.55R.

Walls, John E., to American Hoechst Corporation. Light-sensitive polymeric diazonium condensates and reproduction compositions and materials therewith. 4,436,804, Cl. 430-157.000.

Walls, John E., to American Hoechst Corporation. Developer composition with sodium, lithium and/or potassium salts for developing negative working imaged photographic material. 4,436,807, Cl. 430-331.000.

Walser, Armin: *See*—
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,436,662, Cl. 260-245.700.

Walsh, Brian F.; and Halpert, David E., to Xerox Corporation. Low resolution raster images. 4,437,122, Cl. 358-166.000.

Walsh, Edward J.; and Kurz, Robert A., to Westinghouse Electric Corp. Apparatus for continually upgrading transformer dielectric liquid. 4,437,082, Cl. 336-58.000.

Walter Hofmann Maschinenfabrik, Firma: *See*—
Hofmann, Frank, 4,436,230, Cl. 222-614.000.

Walter, Lothar: *See*—
Ernst, Horst M.; Brandenstein, Manfred; Walter, Lothar; and Olschewski, Armin, 4,435,890, Cl. 29-148.40R.

Walters, Anthony J.; and Nelson, Stanford C., to Walters, Anthony J. Descaler for systems employing water as a heat transfer agent. 4,436,604, Cl. 204-196.000.

Wandel, Dietmar: *See*—
Koschinek, Gunter; Wandel, Dietmar; Kretschmann, Bernd; and Zinsser, Rolf, 4,436,688, Cl. 264-176.00F.

Wang Associates: *See*—
Wang, Chia-Gee, 4,436,826, Cl. 436-525.000.

Wang, Chia-Gee, to Wang Associates. Tagged immunoassay. 4,436,826, Cl. 436-525.000.

Wang, Li-Kong: *See*—
Parrillo, Louis C.; Reutlinger, George W.; and Wang, Li-Kong, 4,435,895, Cl. 29-571.000.

Ward, Donald W.: *See*—
Dahl, James M.; Jacobs, Bernard B.; Lipovac, Joseph E.; Meglen, Ralph A.; and Ward, Donald W., 4,436,497, Cl. 425-28.00R.

Warlaumont, John M.: *See*—
Brady, Michael J.; Meyerson, Bernard S.; and Warlaumont, John M., 4,436,797, Cl. 430-5.000.

Warnaar, Leendert G.: *See*—
Verhagen, Laurentius A. M.; and Warnaar, Leendert G., 4,436,760, Cl. 426-603.000.

Warner-Lambert Company: *See*—
Smitka, Tim A.; Bunge, Richard H.; French, James C.; and Bloem, Russell J., 4,436,750, Cl. 424-279.000.

Warner, Philip E. Left-handed letterer. 4,435,903, Cl. 33-23.00D.

Watabe, Akinori; Yonezawa, Susumu; and Tanaka, Yoshiharu, to Nippon Telegraph & Telephone Public Corporation; and Mansei Kogyo Kabushiki Kaisha. Small-sized video or audio pickup device having a beam deflector disposed within a focusing device support. 4,437,177, Cl. 369-45.000.

Watanabe, Atsuo; and Uno, Masahiro, to Fuji Electric Co., Ltd. Photoacoustic spectrometer. 4,436,428, Cl. 356-432.000.

Watanabe, Kenichi; and Sumimoto, Takashi, to Toyo Kogyo Co., Ltd. Front wheel suspension for a front engine-front wheel drive automobile. 4,436,175, Cl. 180-254.000.

Watanabe, Koji, to NIFCO, Inc. Device for clamping one terminal end of a tape in a tape reel. 4,436,253, Cl. 242-74.100.

Watanabe, Takashi: *See*—
Narato, Kiyoshi; Ohtsuka, Keizou; Inada, Tooru; and Watanabe, Takashi, 4,436,699, Cl. 422-68.000.

Watari, Takashi: *See*—
Inoue, Morio; Hoshino, Satoshi; Namura, Hideki; and Watari, Takashi, 4,436,482, Cl. 416-1.000.

Watkins, Hugh: *See*—
Boden, Richard M.; Tyszkiewicz, Theodore J.; and Watkins, Hugh, 4,436,652, Cl. 252-522.00R.

Watson, Kenneth, to Westland plc. Helicopter rotors. 4,436,483, Cl. 416-143.000.

Watts, Lewis W., Jr.: *See*—
Sanderson, John R.; Renken, Terry L.; and Watts, Lewis W., Jr., 4,436,926, Cl. 560-246.000.
Sanderson, John R.; and Watts, Lewis W., Jr., 4,436,927, Cl. 560-246.000.
Sanderson, John R.; Renken, Terry L.; and Watts, Lewis W., Jr., 4,436,928, Cl. 560-246.000.
Sanderson, John R.; and Watts, Lewis W., Jr., 4,436,929, Cl. 560-246.000.
Sanderson, John R.; and Watts, Lewis W., Jr., 4,436,930, Cl. 560-246.000.
Sanderson, John R.; Watts, Lewis W., Jr.; and Renken, Terry L., 4,436,931, Cl. 560-246.000.
Sanderson, John R.; Vanderpool, Steven H.; and Watts, Lewis W., Jr., 4,436,932, Cl. 560-246.000.

Waugh, Gerald F., to Frymaster Corporation, The. Cooking computer. 4,437,159, Cl. 364-400.000.

Wavin B.V.: *See*—
Olderaan, Wilhelmus F. T. C., 4,435,888, Cl. 29-235.000.

Webasto-Werk W. Baier GmbH & Co.: *See*—
Jardin, Hans, 4,436,338, Cl. 296-223.000.
Lamkewitz, Falk; and Riedmaier, Josef, 4,436,064, Cl. 123-142.50R.

Weber, Georg: *See*—
Schulz, Rudi; Puestel, Hubert; Weber, Georg; and Kuerten, Heribert, 4,436,702, Cl. 422-195.000.

Weber, T. Jerome, to GCA Corporation. Apparatus for heat treating semiconductor wafers. 4,436,985, Cl. 219-388.000.

Webster, Ronald B.: *See*—
Logan, David J.; Webster, Ronald B.; and Sullivan, Daniel J., 4,435,904, Cl. 33-143.00K.

Wegh, John R.: *See*—
Bolenbaugh, Daniel L.; and Wegh, John R., 4,436,187, Cl. 188-73.450.

Weikert, Norbert B.: *See*—
Best, Gerd; and Weikert, Norbert B., 4,436,346, Cl. 299-87.000.

Weikert, Roy J. Method for joining webs of aseptic pouches. 4,436,567, Cl. 156-158.000.

Weiler, Gerhard H.; and Pagels, Louis T., to Automatic Liquid Packaging, Inc. Threaded cap for severing a closure from a hermetically sealed container. 4,436,210, Cl. 215-32.000.

Weimann, Gunter: *See*—
Batz, Hans-Georg; Linke, Hans-Ralf; Stellner, Klaus; and Weimann, Gunter, 4,436,828, Cl. 436-545.000.

Weinel, Johann: *See*—
Ophoff, Paul-Arthur; and Weinel, Johann, 4,437,005, Cl. 250-343.000.

Weinstock, Jacques, to UPA Technology, Inc. Aperture piece and method for calibrating backscatter thickness measuring instruments for measuring concave workpieces. 4,437,000, Cl. 250-308.000.

Weiss, Viktor: *See*—
Fryberg, Mario; and Weiss, Viktor, 4,436,811, Cl. 430-564.000.

Weitz, Hans-Martin; Fischer, Rolf; and Pohl, Hans H., to BASF Aktiengesellschaft. Preparation of o-xylene and ethylbenzene. 4,436,944, Cl. 585-408.000.

Weitzel, Harold B.; and Parman, David G., to Ricwil, Incorporated. Method of making a heating device for utilizing the skin effect of alternating current. 4,436,565, Cl. 156-49.000.

Welander, Walter E. Positive drive differential for vehicle including tractors. 4,435,995, Cl. 74-711.000.

Welch, William R.: *See*—
Fisher, Ernest P., Jr.; and Welch, William R., 4,436,152, Cl. 166-214.000.

Wells, John R., to Wescor, Inc. Method and apparatus for separating cells by sedimentation velocity. 4,436,634, Cl. 210-800.000.

Wenninger, Fred W.: *See*—
Christopher, Chris J.; Wenninger, Fred W.; Morris, Donald E.; Covington, Wayne F.; Folsom, Jerry B.; Beyers, Joseph W.; Nairn, John H.; and Osborne, Jeffrey C., 4,437,156, Cl. 364-200.000.

Wentzell, Timothy H., to Combustion Engineering, Inc. Torsionless multiple connector reel device. 4,436,190, Cl. 191-12.20R.

Werquin, Jean C.: *See*—
Bocquet, Jacques; and Werquin, Jean C., 4,436,791, Cl. 428-682.000.

Wescor, Inc.: *See*—
Wells, John R., 4,436,634, Cl. 210-800.000.

West Company, The: *See*—
Allen, Roland M.; and Kalocai, Andrew J., 4,436,478, Cl. 414-752.000.

Western Electric Co., Inc.: *See*—
Brosman, James W., Jr.; Nemeth, Carol A.; and Shapiro, Alan K., 4,436,474, Cl. 414-417.000.
Hansen, Robert C.; and Novorolsky, Paul G., 4,436,958, Cl. 179-2.00A.
Suranyi, Gabriel G., 4,437,148, Cl. 363-89.000.

Westinghouse Electric Corp.: *See*—
Dorman, John G.; Balbo, Anthony M.; Randall, Charles E.; and Sette, Robert A., 4,436,184, Cl. 187-29.00R.
Gyugyi, Laszlo, 4,437,052, Cl. 323-210.000.
Link, Vincent F.; and Yamasaki, George K., 4,437,038, Cl. 313-633.000.
Ludwig, Richard H.; Quan, Wing C.; Husson, Alan L.; Dirnberger, Linus R.; and Polis, Marjorie J., 4,436,185, Cl. 187-29.00R.
Olmsted, Gaylord S.; and Rosno, Gordon W., 4,436,016, Cl. 89-1.809.
Radford, Kenneth C.; and Harrison, Don E., 4,436,677, Cl. 264-0.500.
Steinbruegge, Kenneth B.; Schruben, Johanna S.; and Taylor, Lyle H., 4,436,363, Cl. 350-1.600.
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Westland plc: *See*—
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Wetzel, Peter: *See*—
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Wey, Robert A.; and Roberts, Harold A., to Augat Inc. Vacuum chuck for holding filaments. 4,436,295, Cl. 269-21.000.

Weyh, Gerd: *See*—
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Whaley, Wilson M.: *See*—
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Wheaton Industries: *See*—
Allen, Fred E.; Thuener, Bruce W.; and Shadinger, Peter R., 4,436,500, Cl. 425-290.000.

Wheeler, Thomas N., to Union Carbide Corporation. Biocidal enol derivatives of 2-aryl-1,3-cycloalkanedione compounds. 4,436,666, Cl. 260-455.00B.

Wheeler, Warren H.: *See*—
Russon, Darrel L.; and Wheeler, Warren H., 4,436,007, Cl. 83-23.000.

Wheeler, William J., to Eli Lilly and Company. 7-[2-(2-Aminooxazol-4-yl)-2-(oximino)acetamido cephalosporin antibiotics and intermediates therefor. 4,436,912, Cl. 548-233.000.

White, David N., to Contour Med Partners, Ltd. Method of forming implantable prostheses for reconstructive surgery. 4,436,684, Cl. 264-138.000.

White, Henry J.: *See*—
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Whiting, Roger L.: *See*—
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Whitney, Sandra L.: *See*—
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Whitten, James R., to General Electric Company. Fiber optics transducers for sensing parameter magnitude. 4,436,995, Cl. 250-227.000.

Wickramasinghe, Hemantha K., to National Research Development Corporation. Acoustic coupling device. 4,435,985, Cl. 73-642.000.

Wico Corporation: *See*—
Kim, Syng N., 4,436,971, Cl. 200-295.000.

Widmer, Peter. Apparatus for carrying out an anaerobic fermentation of organic solid matter for the purpose of extracting a combustible gas. 4,436,818, Cl. 435-316.000.

Wilder, David M. Roll mill for reduction of moisture content in waste material. 4,436,028, Cl. 100-121.000.

Wiley, Alvin F.: *See*—
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Wilhelm, Frederick C.: *See*—
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Wilkinson Rubber Linatex Limited: *See*—
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Willett, John T.: *See*—
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William H. Rorer, Inc.: *See*—
Studt, William L.; Zimmerman, Harry K.; and Douglas, George H., 4,436,911, Cl. 546-291.000.

Williams, Lonnie M., to Williams Panel Board Company. Method of disassembling wooden pallets. 4,435,892, Cl. 29-239.000.

Williams Panel Board Company: *See*—
Williams, Lonnie M., 4,435,892, Cl. 29-239.000.

Williams, Ralph E., to United States of America, Navy. Plated bridge step-over connection for monolithic devices and method for making thereof. 4,436,766, Cl. 427-96.000.

Williamson, John G., Jr., to Marshall and Williams Company. Automatic lint screen. 4,435,909, Cl. 34-82.000.

Willingham, James T., to South Plains Sheet Metal, Inc. Suction pipe. 4,436,457, Cl. 406-116.000.

Willis, Clive: *See*—
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Wilson, Charles A., II: *See*—
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Wilson, Gordon R.: *See*—
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Wilson, Jerry L. Device for recording the dispensing of fluids. 4,436,223, Cl. 222-36.000.
Winstead, Thomas W., to Maryland Cup Corporation. Method and apparatus for generating foamed thermoplastic materials. 4,436,679, Cl. 264-40.300.
Wippig, Werner: *See*—
Magnus, Wolf; Braach, Otto; Fischer, Dirk; and Wippig, Werner, 4,436,448, Cl. 405-143.000.
Wisdom, Lawrence W.; and Wilson, Gordon R., to Frito-Lay, Inc. Liquid-solid contacting apparatus. 4,436,458, Cl. 406-135.000.
Wissman, Lawrence Y.: *See*—
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Witalka, Jerome J.; Kurth, Duane G.; and Baber, David J., to Sperry Corporation. Dynamic subchannel allocation. 4,437,157, Cl. 364-200.000.
Withnall, Malcolm D. N.: *See*—
Taylor, Michael; and Withnall, Malcolm D. N., 4,436,222, Cl. 221-223.000.
Witt, Donald R., to Phillips Petroleum Company. Polymerization process utilizing a catalyst prepared by aging of a chromium-containing gel at high pH. 4,436,882, Cl. 526-106.000.
Witt, Donald R., to Phillips Petroleum Company. Polymerization using a support formed by heating silica gel in inert atmosphere. 4,436,883, Cl. 526-106.000.
Witten, Raymond L., to Hughes Tool Company. Below motor pressure compensation system for submersible pump. 4,436,488, Cl. 417-53.000.
Wittmann, Heinz; and Konwitza, Vladimir, to TMC Corporation. Locking mechanism. 4,436,322, Cl. 280-614.000.
Wojcik, William. Process for customizing glass greeting cards and glass greeting card product. 4,436,776, Cl. 428-14.000.
Wolf, Alfred P.: *See*—
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Wolff, Konrad: *See*—
Hofmann, Hansdieter; Rothe, Hans-Jochen; Skupin, Georg; and Wolff, Konrad, 4,436,898, Cl. 528-336.000.
Wong, Robert: *See*—
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Wood, Denis; Thomas, John F., Jr.; and Dipper, Barry, to Donnelly Mirrors, Inc. Vehicle mirror assembly. 4,436,371, Cl. 350-281.000.
Wood, Louis L.; and Calton, Gary J., to Purification Engineering, Inc. Immobilized microbial cell composition for making L-aspartic acid. 4,436,813, Cl. 435-109.000.
Wood, Richard F.; and Young, Rosa T., to United States of America, Energy. Modified laser-annealing process for improving the quality of electrical P-N junctions and devices. 4,436,557, Cl. 148-1.500.
Wood, William E.; and Barber, Franklin T., to Phillips Petroleum Company. Removal of contaminants in liquid purification. 4,436,902, Cl. 528-501.000.
Woodall, Jerry M.: *See*—
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Woodings, Robert T. Method and apparatus for opening blast-furnace tap holes. 4,436,285, Cl. 266-45.000.
Woudstra, Gerrit, to Stamicarbon B.V. Arrangement for monitoring cathodically protected structures. 4,437,065, Cl. 324-425.000.
Wright, Franklin J., to Exxon Research and Engineering Co. Iron-thallium catalysts for use in CO hydrogenation and process of preparing the catalysts. 4,436,834, Cl. 502-201.000.
Wright, Lamont R.: *See*—
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Wuelfing, Johann A.: *See*—
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Doery, Michael S.; Hanzlik, Edward W. C.; Adamek, John A.; and McLaughlin, William J., 4,436,301, Cl. 271-177.000.
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Yagihara, Morio; Hirano, Tsumoru; and Mihayashi, Keiji, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,436,808, Cl. 430-381.000.
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Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, to Dai Nippon Toryo Co., Ltd.; and Asahi Glass Company Ltd. Anticorrosive coating process. 4,436,773, Cl. 427-380.000.
Yamada, Junichi: *See*—
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Jardin, Stephen C.; Yamada, Masaaki; Furth, Harold P.; and Okabayashi, Mitcheo, 4,436,691, Cl. 376-137.000.
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Yamagata, Ryutaro; Kozuka, Nobuhiko; Nishihama, Hitoshi; Koyama, Shigeo; and Sakai, Kazutada, to Mita Industrial Company Limited. Cleaning device for use on an electrostatic copying apparatus. 4,436,412, Cl. 355-15.000.
Yamagata, Tetuo: *See*—
Imamura, Yoshinobu; Kamei, Shigeki; Yamagata, Tetuo; and Fujii, Hiroshi, 4,436,026, Cl. 100-45.000.
Yamaguchi, Bunitsu: *See*—
Miyoshi, Seizo; and Yamaguchi, Bunitsu, 4,437,178, Cl. 369-75.100.
Yamaguchi, Elaine S., to Chevron Research Company. Glycolate dithiophosphoric acids, metal salts thereof and oil compositions containing the salts. 4,436,640, Cl. 252-32.70E.
Yamaguchi, Hiroshi; and Negishi, Nobumasa, to Mitsubishi Denki Kabushiki Kaisha. Device for detecting flame in open-type combustor and oxygen density of indoor air. 4,436,505, Cl. 431-76.000.
Yamaguchi, Katsunobu; Matsuoka, Seiichi; Hayashida, Takayuki; and Hayase, Tomio, to JGC Corporation; and Tsukishima Kikai Co., Ltd., a part interest. Process for converting solid wastes to gases for use as a town gas. 4,436,532, Cl. 48-209.000.
Yamaguchi, Noboru; and Satoh, Seiichi, to Nissan Motor Co., Ltd. Harness clip. 4,435,881, Cl. 24-16.0PB.
Yamaguchi, Yutaka; Koizumi, Nobuyuki; Araki, Tamio; Kojima, Koichi; and Ikeda, Nobumasa, to Bridgestone Tire Co., Ltd. Pneumatic radial tires. 4,436,131, Cl. 152-361.0FP.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Takahashi, Masanori; and Uehara, Hidehiko, 4,436,514, Cl. 440-89.000.
Yamaizumi, Kazuo, to Nagano Keiki Seisakusho, Ltd. Plunger pump. 4,436,494, Cl. 417-403.000.
Yamakawa Industrial Company, Limited: *See*—
Emura, Koji; Suzuki, Tuneo; and Kazama, Hidemichi, 4,436,685, Cl. 264-148.000.
Yamamoto, Etsuji; Sekihara, Kensuke; and Kohno, Hideki, to Hitachi, Ltd. Electromagnet. 4,437,136, Cl. 361-146.000.
Yamamoto, Hideo: *See*—
Matsumoto, Shuichi; Hatori, Yoshinori; Murakami, Hitomi; and Yamamoto, Hideo, 4,437,119, Cl. 358-136.000.
Yamamoto, Kaichi, to Sony Corporation. Digital signal processing method and apparatus. 4,437,125, Cl. 358-167.000.
Yamamoto, Kazuo, to NSK-Warner K.K. Locking device for a moving anchor of a seat belt. 4,436,323, Cl. 280-804.000.
Yamamoto, Keisaku: *See*—
Furukawa, Hiroshi; Saito, Yuichi; Imai, Akio; Yamamoto, Keisaku; Takao, Hiroyoshi; and Yoshida, Nobuyuki, 4,436,873, Cl. 525-314.000.
Yamamoto, Sakuei; and Nishida, Mitsuhiro, to Mitsubishi Denki Kabushiki Kaisha. Molded submersible motor. 4,437,027, Cl. 310-78.000.
Yamamoto, Tsuyoshi; Taniguchi, Norihisa; Iida, Kazuyoshi; and Kondo, Yoshikazu, to Japanese National Railways; and Bridgestone Tire Company Limited. Noise control apparatus. 4,436,179, Cl. 181-210.000.
Yamamoto, Yasuo: *See*—
Horie, Shigeru; Yamamoto, Yasuo; and Ikarashi, Takeo, 4,436,835, Cl. 502-208.000.
Yamamura, Masaaki; Igarashi, Taizo; and Ukigai, Toshiyuki, to Kao Soap Co., Ltd.; Lion Corporation; and Nippon Oil and Fats Co., Ltd. Stabilizer for mixed fuels. 4,436,527, Cl. 44-51.000.
Yamanaka, Mitsuyuki: *See*—
Hayashi, Yutaka; Yamanaka, Mitsuyuki; and Karasawa, Hideyuki, 4,436,761, Cl. 427-38.000.
Yamasaki, George K.: *See*—
Link, Vincent F.; and Yamasaki, George K., 4,437,038, Cl. 313-633.000.
Yamashita, Itaru: *See*—
Sakamoto, Noboru; Yamashita, Itaru; Wada, Satoshi; Yano, Kenichi; and Oda, Suehiro, 4,436,981, Cl. 219-124.320.
Yamashita, Keitaro; and Kashiwagi, Hiromi, to Hitachi Metals, Ltd. Developing apparatus. 4,436,055, Cl. 118-658.000.
Yamashita, Masahide; Oku, Hikaru; and Maruyama, Masato, to Nippon Telegraph & Telephone Public Corp. of 1-6. Communication control unit. 4,437,168, Cl. 364-900.000.
Yamashita, Sadahiko: *See*—
Makimoto, Mitsuo; Endo, Haruyoshi; Kikuchi, Ko; and Yamashita, Sadahiko, 4,437,076, Cl. 333-206.000.
Yamazaki, Shigetomo, to Kabushiki Kaisha Akashi Seisakusho. Scanning electron microscope or similar equipment. 4,437,009, Cl. 250-396.0ML.
Yamazoe, Hisamitsu: *See*—
Nakatsuka, Hirotaka; Mizuno, Toshiaki; Yamazoe, Hisamitsu; and Matsuoka, Hiroki, 4,436,074, Cl. 123-492.000.
Yano, Kenichi: *See*—
Sakamoto, Noboru; Yamashita, Itaru; Wada, Satoshi; Yano, Kenichi; and Oda, Suehiro, 4,436,981, Cl. 219-124.320.

Yano, Kohzo; Hamada, Hiroshi; Inami, Yasuhiko; and Wada, Tomio, to Sharp Kabushiki Kaisha. Electrochromic display device. 4,436,380, Cl. 350-357.000.

Yano, Shunji: *See*—
Nishida, Yoshiaki; Yano, Shunji; and Masuyama, Tadahiro, 4,436,594, Cl. 204-33.000.

Yoda, Kuniichi: *See*—
Ohkawa, Takehisa; and Yoda, Kuniichi, 4,436,786, Cl. 428-447.000.

Yokota, Hajime: *See*—
Yoshida, Masashi; Yokota, Hajime; Aman, Mitsuji; and Shigemura, Tatsuya, 4,437,129, Cl. 360-85.000.

Yokouchi, Hisatake: *See*—
Matsuda, Tadahito; Okumura, Masahide; Yokouchi, Hisatake; Ozasa, Susumu; and Kato, Yasuo, 4,437,008, Cl. 250-396.00R.

Yonezawa, Susumu: *See*—
Watabe, Akinori; Yonezawa, Susumu; and Tanaka, Yoshiharu, 4,437,177, Cl. 369-45.000.

Yoos, Charles J. Appliance supports. 4,436,335, Cl. 296-24.00R.

Yoritomi, Ryutaro. Rod device for use as an arm of an excavator. 4,436,476, Cl. 414-690.000.

York, Billie M., Jr., to Alcon Laboratories, Inc. Method of inhibiting aldose reductase activity. 4,436,745, Cl. 424-273.00R.

Yoshida, Chosaku: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,436,921, Cl. 544-238.000.

Yoshida, Hajime, to Hajime Industries Ltd. Object and inspection system. 4,437,115, Cl. 358-106.000.

Yoshida Kogyo K K: *See*—
Seki, Fumio, 4,436,238, Cl. 227-149.000.

Yoshida, Masashi; Yokota, Hajime; Aman, Mitsuji; and Shigemura, Tatsuya, to Hitachi, Ltd. Magnetic recording and reproducing apparatus enabling tape transport in the forward and reverse directions. 4,437,129, Cl. 360-85.000.

Yoshida, Nobuyuki: *See*—
Furukawa, Hiroshi; Saito, Yuichi; Imai, Akio; Yamamoto, Keisaku; Takao, Hiroyoshi; and Yoshida, Nobuyuki, 4,436,873, Cl. 525-314.000.

Yoshida, Tugusi: *See*—
Urasaki, Takanori; Hirabayashi, Yasuji; Yoshida, Tugusi; and Inata, Hiroo, 4,436,894, Cl. 528-176.000.

Yoshida, Yoshiaki: *See*—
Seiki, Kazuo; Motobayashi, Kozo; Yoshizawa, Toshio; Yoshida, Yoshiaki; and Onoue, Keiji, 4,435,954, Cl. 57-408.000.

Yoshikawa, Kensei: *See*—
Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Kutaka; Ishigura, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,436,939, Cl. 568-813.000.

Yoshimura, Hirofumi: *See*—
Ikeda, Nobuo; and Yoshimura, Hirofumi, 4,436,973, Cl. 219-10.55F.

Yoshimura, Shoji: *See*—
Shimizu, Shigeo; Takano, Hiroyuki; Yoshimura, Shoji; and Takada, Kinji, 4,436,904, Cl. 544-27.000.

Yoshizawa, Toshio: *See*—
Seiki, Kazuo; Motobayashi, Kozo; Yoshizawa, Toshio; Yoshida, Yoshiaki; and Onoue, Keiji, 4,435,954, Cl. 57-408.000.

Young, Rosa T.: *See*—
Wood, Richard F.; and Young, Rosa T., 4,436,557, Cl. 148-1.500.

Young, Sam H.: *See*—
Adrian, David L.; and Young, Sam H., 4,435,912, Cl. 40-365.000.

Yourd, Raymond A., III: *See*—
Chromecek, Richard C.; Friends, Gary D.; Wissman, Lawrence Y.; and Yourd, Raymond A., III, 4,436,887, Cl. 526-263.000.

Ytter, Willy, to Extraversion, Inc. Portable display system. 4,436,135, Cl. 160-135.000.

Yuda, Takuo; and Notoya, Yoshiaki, to Nifco Inc. Fastening means for rearview mirror in automobile interior. 4,436,273, Cl. 248-549.000.

Yukimoto, Kazuyoshi: *See*—
Hayashi, Motomu; Ishikawa, Atuo; and Yukimoto, Kazuyoshi, 4,437,143, Cl. 362-272.000.

Zajicek, Ernst: *See*—
Kilches, Helmut D.; Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, 4,436,290, Cl. 266-158.000.
Riegler, Ernst; and Zajicek, Ernst, 4,437,187, Cl. 373-73.000.

Zakarian, John A.: *See*—
Olbrich, Hazel C.; O'Rear, Dennis J.; and Zakarian, John A., 4,436,614, Cl. 208-89.000.

Zaltsman, Efim, to Monarch Wine Co., Inc. Method and apparatus for stoppering modified bottles with a one-piece corking means. 4,435,942, Cl. 53-489.000.

Zane, Michael S.: *See*—
Zane, Peter L.; and Zane, Michael S., 4,436,232, Cl. 224-39.000.

Zane, Peter L.; and Zane, Michael S., to KBL Corporation. Bracket for motorcycle lock. 4,436,232, Cl. 224-39.000.

Zangenberg, Jan, to Danfoss A/S. Control device for a liquid pump with adjustable pumping volume. 4,436,489, Cl. 417-218.000.

Zarich, Milan S. Stringed instrument bridge. 4,436,015, Cl. 84-298.000.

Zaruba, John V.; and Terzian, Rouben T., to Marvin Glass & Associates. Hanging doll house structure. 4,435,915, Cl. 46-12.000.

Zbinden, Peter: *See*—
Hugelshofer, Paul; Zbinden, Peter; and Koci, Zdenek, 4,436,523, Cl. 8-527.000.

Zboralski, Jon A.; Grow, Harry N.; and Holschbach, Stephen E., to Hamilton Industries, Inc. Fume hood incorporating high efficiency auxiliary air plenum. 4,436,022, Cl. 98-115.0LH.

Zeeh, Bernd; Goetz, Norbert; Ammermann, Eberhard; and Jung, Johann, to BASF Aktiengesellschaft. Plant growth regulating α-azolylglycols. 4,436,548, Cl. 71-76.000.

Zeisky, Andre L. Clip-on bookmark. 4,436,053, Cl. 116-237.000.

Zenith Radio Corporation: *See*—
Feinberg, Jay H.; and Knowles, Terrance, 4,436,240, Cl. 228-122.000.

Zergenyi, Janos: *See*—
Aufderhaar, Ernst; Sprecher, Klemenz; and Zergenyi, Janos, 4,436,660, Cl. 260-239.00D.

Zesiger, Karl: *See*—
Annen, Oskar; Egli, Hermann; and Zesiger, Karl, 4,436,521, Cl. 8-493.000.

Zezza, Louis J.; and Husain, Iqbal, to Automation Industries, Inc. Non-impacting loose rod storage canister. 4,436,693, Cl. 376-272.000.

Zhdanov, Vasily V.: *See*—
Shevakin, Jury F.; Dobkin, Igor I.; Donskoi, Efim M.; Manov, Grigory L.; Zhdanov, Vasily V.; Berger, Elena S.; Popov, Valery M.; Pavlov, Alexei A.; and Akchurin, Rashid Z., 4,435,886, Cl. 29-33.00D.

Zhed, Viktor P.: *See*—
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; and Sinelschikov, Andrei K., 4,436,830, Cl. 501-96.000.

Zimmerman, Harry K.: *See*—
Studt, William L.; Zimmerman, Harry K.; and Douglas, George H., 4,436,911, Cl. 546-291.000.

Zinsser, Rolf: *See*—
Koschinek, Gunter; Wandel, Dietmar; Kretschmann, Bernd; and Zinsser, Rolf, 4,436,688, Cl. 264-176.00F.

Zipp, Otmar; Bollmann, Heinz; Stutz, Herbert; and Scholz, Wolfgang, to Elastogran GmbH. Production of closed-cell polyurethane moldings having a densified surface zone. 4,436,869, Cl. 525-51.000.

Zirker, Guenter: *See*—
Broecker, Franz J.; Gruendler, Karl-Heinz; Marosi, Laszlo; Schwarzmann, Matthias; Triebskorn, Bruno; and Zirker, Guenter, 4,436,833, Cl. 502-176.000.

Zmoda, Barney J.; and Fessock, Paul J., to Colgate-Palmolive Company. Fuel gel for charcoal or wood fires. 4,436,525, Cl. 44-7.300.

Zobawa, Franz: *See*—
Hoffmann, Richard; and Zobawa, Franz, 4,436,362, Cl. 339-103.00M.

Zoebe, Hugo: *See*—
Prinz, Bruno; Rockel, Manfred B.; Rudolph, Gunther; Heubner, Ulrich; and Zoebe, Hugo, 4,436,790, Cl. 428-675.000.

Zondler, Helmut; Lohse, Friedrich; and Moser, Roland, to Ciba-Geigy Corporation. Imidazolides. 4,436,892, Cl. 528-117.000.

Zuhlke, Rainer: *See*—
Miersch, Eddehard F.; Pollmann, Kurt; Schettler, Helmut; and Zuhlke, Rainer, 4,437,022, Cl. 307-270.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF MARCH, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Flatland, Lloyd P. Dental handpiece connector. Re. 31,537, Cl. 433-82.000.

Holdiman, Joseph W.; and Justice, Douglas E. Metal cladded window products. Re. 31,536, Cl. 49-501.000.

Justice, Douglas E.: *See*—
Holdiman, Joseph W.; and Justice, Douglas E., Re. 31,536, Cl. 49-501.000.

Schleicher, Louis C. Spot clinch means and method. Re. 31,535, Cl. 29-432.200.

LIST OF DESIGN PATENTEES

Aavid Engineering, Inc.: *See*—
McCarthy, Alfred F., 273,006, Cl. D13-23.000.

Akita, Tsugio; and Nagayama, Shinichi, to Matsushita Electric Industrial Co., Ltd. Food processor. 272,979, 3-13-84, Cl. D7-384.000.

Allen, John. Rail support fitting for a double post, rail fence unit or the like. 272,987, 3-13-84, Cl. D8-354.000.

AMC International Alfa Metalcraft Corporation AG: *See*—
Ryser, Theophil, 272,974, Cl. D7-394.000.

American Cyanamid Company: *See*—
Woodruff, Keith, 273,032, Cl. D22-19.000.

American Metal Ware Co.: *See*—
Miller, Gordon R., 272,975, Cl. D7-309.000.

American Standard Inc.: *See*—
Fisher, Michael D.; Flowers, Thomas S.; and Fort, George E., 273,046, Cl. D25-74.000.

Anderson, Duane L.; Clarke, Robert S.; and Morris, Lewis R., to First Champaign Corporation. Motorcycle sidecar. 272,997, 3-13-84, Cl. D12-116.000.

Anderson, Howard A., to Schwartz, Leonard. Dumbbell. 273,030, 3-13-84, Cl. D21-197.000.

Artwick, Kert E., to Questor Corporation. Basement window cover. 273,045, 3-13-84, Cl. D25-54.000.

Associated Medical Devices, Inc.: *See*—
Behrens, James D., 273,039, Cl. D24-17.000.

Au, Albert K. H.: *See*—
Wong, Ka W.; and Au, Albert K. H., 272,992, Cl. D10-106.000.

Baldwin Piano & Organ Company: *See*—
Kimble, Thomas E., 273,015, Cl. D17-5.000.

Barbieri, Raul; and Marianelli, Giorgio. Tray for holding stationery articles. 273,018, 3-13-84, Cl. D19-75.000.

Beerens, Cornelis J. M. Saw sharpening guide. 272,985, 3-13-84, Cl. D8-71.000.

Behrens, James D., to Associated Medical Devices, Inc. Housing for a portable electronic control for a intraesophageal pacer. 273,039, 3-13-84, Cl. D24-17.000.

Bertrac, Pierre, to Parker Pen France. Writing instrument. 273,017, 3-13-84, Cl. D19-49.000.

Biddle, Howard W., to Ofrex Group Limited. Tacker. 272,983, 3-13-84, Cl. D8-51.000.

Booker, Gary. Fireplace door. 273,035, 3-13-84, Cl. D23-128.000.

Bryant, Peter D.: *See*—
Emms, Norman R.; and Bryant, Peter D., 273,025, Cl. D21-69.000.
Emms, Norman R.; and Bryant, Peter D., 273,026, Cl. D21-69.000.

Celle, Inc.: *See*—
Runyon, Richard, 273,051, Cl. D28-76.000.

Chalabian, Jack S., to K-Jack Engineering Company, Inc. Newspaper vending machine. 273,019, 3-13-84, Cl. D20-6.000.

Chalabian, Jack S., to K-Jack Engineering Company, Inc. Newspaper vending machine. 273,020, 3-13-84, Cl. D20-6.000.

Chalabian, Jack S., to K-Jack Engineering Company, Inc. Newspaper vending machine. 273,021, 3-13-84, Cl. D20-6.000.

Chalabian, Jack S., to K-Jack Engineering Company, Inc. Newspaper vending machine. 273,022, 3-13-84, Cl. D20-6.000.

Chalabian, Jack S., to K-Jack Engineering Company, Inc. Newspaper vending machine insert. 273,023, 3-13-84, Cl. D20-8.000.

Chan, Chung K., to Mattel, Inc. Portable cabinet door alarm. 272,993, 3-13-84, Cl. D10-106.000.

Chan, Chung K., to Mattel, Inc. Automatic safety entry light. 273,048, 3-13-84, Cl. D26-37.000.

Chan, King M.: *See*—
Lam, Siu L.; Wong Chan, Yuk-Ying; and Chan, King M., 273,049, Cl. D26-38.000.

Chubb Industries Inc.: *See*—
Snodgrass, Clyde R., 273,052, Cl. D99-28.000.

Cidelcem: *See*—
Tallon, Roger, 272,971, Cl. D7-16.000.

Clarke, Robert S.: *See*—
Anderson, Duane L.; Clarke, Robert S.; and Morris, Lewis R., 272,997, Cl. D12-116.000.

Clarvit, Richard N. Baby shoe. 272,961, 3-13-84, Cl. D2-278.000.

Clarvit, Richard N. Baby shoe. 272,962, 3-13-84, Cl. D2-278.000.

Command Automation, Inc.: *See*—
Simjian, Luther G., 273,031, Cl. D21-234.000.

Contemporary Shells Inc.: *See*—
Umanoff, Arthur, 272,967, Cl. D6-56.000.

Cougar Plastics, Inc.: *See*—
Emge, James M., 273,024, Cl. D21-31.000.

Cuoco, Benjamin A. Linen tester. 273,014, 3-13-84, Cl. D16-135.000.

Dart Industries Inc.: *See*—
De Coster, Pieter K. J., 272,972, Cl. D7-47.000.
De Coster, Pieter K. J., 272,973, Cl. D7-47.000.
Gremponrez, Dan E.; and Painter, David L., 272,978, Cl. D7-357.000.

De Coster, Pieter K. J., to Dart Industries Inc. Sifter or the like. 272,972, 3-13-84, Cl. D7-47.000.

De Coster, Pieter K. J., to Dart Industries Inc. Combined sifter and container or the like. 272,973, 3-13-84, Cl. D7-47.000.

DeStefano, Joseph T. Combined keeper and combination lock with retractable cable unit. 272,986, 3-13-84, Cl. D8-331.000.

Dodge, Paul R., to Garrett Corporation, The. Gas turbine fan blade. 273,037, 3-13-84, Cl. D23-165.000.

Dudley, Wayne C. Portable air compressor. 273,011, 3-13-84, Cl. D15-9.000.

Echterling, Eugene J. Toy table. 273,027, 3-13-84, Cl. D21-121.000.

Emge, James M., to Cougar Plastics, Inc. Game board. 273,024, 3-13-84, Cl. D21-31.000.

Emms, Norman R.; and Bryant, Peter D., to Hestair Kiddicraft Limited. Child's toy. 273,025, 3-13-84, Cl. D21-69.000.

Emms, Norman R.; and Bryant, Peter D., to Hestair Kiddicraft Limited. Child's toy. 273,026, 3-13-84, Cl. D21-69.000.

Envall, Bjorn E. A., to Saab-Scania Aktiebolag. Wheel cover. 273,004, 3-13-84, Cl. D12-211.000.

Erkelenz, Johannes F., to Top-Qua & Company Ltd. Bacon grill. 272,977, 3-13-84, Cl. D7-350.000.

Fairaizen, Igal. Convertible sofa. 272,968, 3-13-84, Cl. D6-61.000.

Fairchild Industries, Inc.: *See*—
McComas, Jean, 273,005, Cl. D12-335.000.

Fink, Alexander. Vehicle mounted camper unit. 273,001, 3-13-84, Cl. D12-156.000.

Finney, Donna K., to Quaker Oats Company, The. Stuffed toy. 273,028, 3-13-84, Cl. D21-190.000.

First Champaign Corporation: *See*—
Anderson, Duane L.; Clarke, Robert S.; and Morris, Lewis R., 272,997, Cl. D12-116.000.

Fisher, Michael D.; Flowers, Thomas S.; and Fort, George E., to American Standard Inc. Metal molding for a wall panel or similar article. 273,046, 3-13-84, Cl. D25-74.000.

Flakt Aktiebolag: *See*—
Gustavsson, Lennart; and Maatta, Osten, 273,036, Cl. D23-163.000.

Flowers, Thomas S.: *See*—
Fisher, Michael D.; Flowers, Thomas S.; and Fort, George E., 273,046, Cl. D25-74.000.

Fort, George E.: *See*—
Fisher, Michael D.; Flowers, Thomas S.; and Fort, George E., 273,046, Cl. D25-74.000.

France Bed Co.: *See*—
Masuda, Teruo, 273,038, Cl. D24-03.000.

Fuji Koeko Corporation: *See*—
Takematsu, Yoshiyuki, 273,013, Cl. D16-42.000.

Garrett Corporation, The: *See*—
Dodge, Paul R., 273,037, Cl. D23-165.000.

Gremponrez, Dan E.; and Painter, David L., to Dart Industries Inc. Buffet server. 272,978, 3-13-84, Cl. D7-357.000.

Gustavsson, Lennart; and Maatta, Osten, to Flakt Aktiebolag. Venturi wall for wet separators and the like. 273,036, 3-13-84, Cl. D23-163.000.
Hamada, Masanori; Saigo, Yoshiyuki; Ichino, Etsuko; and Okada, Takao, to Matsushita Electric Industrial Co., Ltd. Portable radio. 273,010, 3-13-84, Cl. D14-68.000.
Hamborg, Peter M. Elastomeric magnetized key container. 273,053, 3-13-84, Cl. D99-28.000.
Hasegawa, Hideaki; Shibano, Saburo; and Kaneko, Terutoshi, to Riken Vinyl Kogyo Kabushiki Kaisha. Dispenser for sheet material. 272,970, 3-13-84, Cl. D6-96.000.
Hestair Kiddicraft Limited: *See*—
Emms, Norman R.; and Bryant, Peter D., 273,025, Cl. D21-69.000.
Emms, Norman R.; and Bryant, Peter D., 273,026, Cl. D21-69.000.
Higgins, David F., to IMI Mouldings Limited. Fluid flow control valve. 273,034, 3-13-84, Cl. D23-19.000.
Hiraishi, Etsuo; and Shohoji, Takeshi, to Ryobi Ltd. Printing machine. 273,016, 3-13-84, Cl. D18-13.000.
Holcomb, William T. Baby bottle holder. 273,044, 3-13-84, Cl. D24-48.000.
Ichino, Etsuko: *See*—
Hamada, Masanori; Saigo, Yoshiyuki; Ichino, Etsuko; and Okada, Takao, 273,010, Cl. D14-68.000.
IMI Mouldings Limited: *See*—
Higgins, David F., 273,034, Cl. D23-19.000.
Instruments for Cardiac Research, Inc.: *See*—
Kullenberg, Fred W., 273,029, Cl. D21-192.000.
Isaacs, Robert B., to Northern Telecom Limited. Tactile alerting bracelet. 273,009, 3-13-84, Cl. D14-52.000.
Ishizaki, Hideaki, to Pioneer Electronic Corporation. Speaker. 273,008, 3-13-84, Cl. D14-30.000.
J&W Scientific, Inc.: *See*—
Jenkins, Rand G.; and Wohlers, Norman W., 273,040, Cl. D24-25.000.
Jackson, William G. Massage roller. 273,042, 3-13-84, Cl. D24-36.000.
Jenkins, Rand G.; and Wohlers, Norman W., to J&W Scientific, Inc. Fused silica syringe needle. 273,040, 3-13-84, Cl. D24-25.000.
Jet Spray Corp.: *See*—
LaLumiere, Edward J., 272,976, Cl. D7-311.000.
Jones, Leroy C. Flag. 272,995, 3-13-84, Cl. D11-180.000.
Jovan, Inc.: *See*—
Podall, Robert; and Robertz, Henry, 272,988, Cl. D9-300.000.
Justice, Andrew C. Spray paint shield. 272,981, 3-13-84, Cl. D8-16.000.
K-Jack Engineering Company, Inc.: *See*—
Chalabian, Jack S., 273,019, Cl. D20-6.000.
Chalabian, Jack S., 273,020, Cl. D20-6.000.
Chalabian, Jack S., 273,021, Cl. D20-6.000.
Chalabian, Jack S., 273,022, Cl. D20-6.000.
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Kaneko, Terutoshi: *See*—
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ISSUED MARCH 13, 1984

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40 4,436,595
59 R 4,436,596
67 4,436,597
4,436,598
98 4,436,599
140 4,436,600
149 4,436,601
192 R 4,436,602
194 4,436,603
196 4,436,604
225 4,436,605
4,436,606
246 4,436,607
265 4,436,608
267 4,436,609
400 4,436,610

CLASS 206

444 4,436,201
455 4,436,202
524.8 4,436,203
525 4,436,204
530 4,436,205
625 4,436,206

CLASS 208

11 R 4,436,611
65 4,436,612
74 4,436,613
89 4,436,614
177 4,436,615

CLASS 209

3 4,436,616
4,436,617
5 4,436,618
573 4,436,619
577 4,436,207
668 4,436,208

CLASS 210

90 4,436,620
232 4,436,621
4,436,622
282 4,436,623
632 4,436,624
634 4,436,625
652 4,436,626
695 4,436,627
697 4,436,628
712 4,436,629
744 4,436,630
772 4,436,631
776 4,436,632
791 4,436,633
800 4,436,634
806 4,436,635

CLASS 211

57.1 4,436,209

CLASS 215

32 4,436,210
216 4,436,211
252 4,436,212
365 4,436,213

CLASS 219

10.55 F 4,436,973
86 4,436,974
69 V 4,436,976
69 W 4,436,975
75 4,436,977
121 LC 4,436,978
4,436,979
123 4,436,980
124.32 4,436,981
130.51 4,436,982
306 4,436,983
383 4,436,984
388 4,436,985
505 4,436,986
535 4,436,987
544 4,436,988

CLASS 220

18 4,436,214
22.3 4,436,215
69 4,436,216
85 D 4,436,217
89 A 4,436,218
295 4,436,219
359 4,436,220

CLASS 221

46 4,436,221
223 4,436,222

CLASS 222

36 4,436,223
183 4,436,224
207 4,436,225
280 4,436,226
382 4,436,227
400.7 4,436,228
402.22 4,436,229
614 4,436,230

CLASS 223

40 4,436,231

CLASS 224

39 4,436,232
159 4,436,233

CLASS 227

4 4,436,234
111 4,436,235
123 4,436,236
130 4,436,237
149 4,436,238

CLASS 228

17 4,436,239
122 4,436,240
124 4,436,241
264 4,436,242

CLASS 229

27 4,436,243
52 B 4,436,244

CLASS 235

1 R 4,436,980
22 4,436,989
381 4,436,992
382 4,436,993
468 4,436,991

CLASS 236

49 4,436,245

CLASS 238

14 4,436,246

CLASS 239

533.7 4,436,247

CLASS 241

101.7 4,436,248

CLASS 242

18 G 4,436,258
18 R 4,436,249
54 R 4,436,250
56 R 4,436,251
72 B 4,436,252
74.1 4,436,253
84.21 R 4,436,254
107.4 A 4,436,255
200 4,436,256
201 4,436,257

CLASS 244

3.1 4,436,259
3.16 4,436,260
51 4,436,261
122 AG 4,436,262
130 4,436,263
153 R 4,436,264

CLASS 248

56 4,436,265
74 R 4,436,266
75 4,436,267
188.3 4,436,268
214 4,436,269
416 4,436,270
460 4,436,271
527 4,436,272
549 4,436,273
633 4,436,274

CLASS 249

47 4,436,275
91 4,436,276

CLASS 250

207 4,436,994
227 4,436,995
256 4,436,996
4,436,997
288 4,436,998
302 4,436,999
308 4,437,000
324 4,437,001
338 4,437,002
4,437,003
343 4,437,004
4,437,005
363 S 4,437,006
366 4,437,007
396 ML 4,437,009
396 R 4,437,008
459.1 4,437,010
486.1 4,437,011
491.1 4,437,012
515.1 4,437,013
574 4,437,014

CLASS 251

6 4,436,277
86 4,436,279
130 4,436,278
174 4,436,283
229 4,436,280
305 4,436,281
329 4,436,282

CLASS 252

8.5 P 4,436,636
8.55 E 4,436,639
8.55 R 4,436,638
8.7 4,436,637
32.7 E 4,436,640
51.5 A 4,436,649
68 4,436,641
95 4,436,642
135 4,436,643
174.13 4,436,644
179 4,436,645
301.4 S 4,436,646
358 4,436,647
511 4,436,648
518 4,436,650
521 4,436,651
522 R 4,436,652
547 4,436,653
574 4,436,654
628 4,436,655

CLASS 256

35 4,436,284

CLASS 260

112 R 4,436,656
4,436,657
122 4,436,658
146 R 4,436,659
239 D 4,436,660
245.3 4,436,661
245.7 4,436,662
245.91 4,436,663
330.6 4,436,664
404 4,436,665
455 B 4,436,666
463 4,436,668
465 B 4,436,669
4,436,670
465 D 4,436,667
465.3 4,436,671
512 R 4,436,672
543 P 4,436,673

CLASS 261

64 B 4,436,674
77 4,436,675
151 4,436,676

CLASS 264

0.5 4,436,677
30 4,436,678
40.3 4,436,679
60 4,436,680
67 4,436,681
70 4,436,682
107 4,436,683
138 4,436,684
148 4,436,685
163 4,436,686
164 4,436,687
176 F 4,436,688
204 4,436,689
313 4,436,690

CLASS 266

44 4,436,286
45 4,436,285
47 4,436,287
69 4,436,288
80 4,436,289
107 4,436,292
158 4,436,290
246 4,436,291
276 4,436,293

CLASS 269

6 4,436,294
21 4,436,295

CLASS 270

31 4,436,296

CLASS 271

3.1 4,436,297
10 4,436,298
100 4,436,299
107 4,436,300
177 4,436,301
202 4,436,302

CLASS 272

132 4,436,303

CLASS 273

29 A 4,436,304
73 C 4,436,305
146 4,436,306
157 R 4,436,307
237 4,436,308
267 4,436,309

CLASS 277

11 4,436,310
27 4,436,311
34 4,436,312
80 4,436,313
86 4,436,314
92 4,436,315
124 4,436,316
134 4,436,317

CLASS 280

104 4,436,318
154.5 R 4,436,319
242 WC 4,436,320
612 4,436,321
614 4,436,322
804 4,436,323

CLASS 283

50 4,436,324

CLASS 285

18 4,436,325
178 4,436,326
364 4,436,327

CLASS 290

1 R 4,437,015
4,437,016
52 4,437,017

CLASS 292

67 4,436,328
150 4,436,329
263 4,436,330
270 4,436,331

CLASS 294

1 R 4,436,332
82 R 4,436,333
86.3 4,436,334

CLASS 296

24 R 4,436,335
76 4,436,336
201 4,436,337
223 4,436,338

CLASS 297

153 4,436,339
193 4,436,340
250 4,436,341
445 4,436,342
456 4,436,343

CLASS 299

2 4,436,344
59 4,436,345
87 4,436,346

CLASS 303

6 R 4,436,347
115 4,436,348

CLASS 307

38 4,437,018
83 4,437,019
135 4,437,020
270 4,437,021
4,437,022
296 R 4,437,023
475 4,437,024
4,437,025

CLASS 308

189 R 4,436,349

CLASS 310

11 4,437,026
78 4,437,027
198 4,437,028
4,437,029
227 4,437,030
313 B 4,437,031
324 4,437,032
334 4,437,033

CLASS 312

7.1 4,436,350
223 4,436,351
228 4,436,352
241 4,436,353
259 4,436,354
270 4,436,355
281 4,436,356
338 4,436,357

CLASS 313

348 4,437,034
388 4,437,035
402 4,437,036
585 4,437,037
633 4,437,038

CLASS 315

60 4,437,039
209 R 4,437,040
248 4,437,041
289 4,437,042
308 4,437,043
366 4,437,044

CLASS 318

561 4,437,045
571 4,437,046
649 4,437,047
663 4,437,048
696 4,437,049
798 4,437,050
808 4,437,051

CLASS 323

210 4,437,052
268 4,437,053

CLASS 324

51 4,437,054
61 R 4,437,055
73 AT 4,437,056
78 R 4,437,057
120 4,437,058
142 4,437,059
158 D 4,437,060
166 4,437,061
238 4,437,062
316 4,437,063
346 4,437,064
425 4,437,065

CLASS 328

14 4,437,066
167 4,437,067

CLASS 329

105 4,437,068

CLASS 330

109 4,437,069
254 4,437,070

CLASS 331

1 A 4,437,071
4,437,072

CLASS 333

28 R 4,437,073
128 4,437,074
167 4,437,075
206 4,437,076
245 4,437,077

CLASS 335

81 4,437,078
170 4,437,079
216 4,437,080
229 4,437,081

CLASS 336

58 4,437,082
65 4,437,083

CLASS 338

22 R 4,437,084

CLASS 339

17 C 4,436,358
61 M 4,436,359
97 P 4,436,360
4,436,361
103 M 4,436,362

CLASS 340

286 M 4,437,085
347 DD 4,437,086
4,437,087
384 E 4,437,088
541 4,437,089
613 4,437,090
623 4,437,091
703 4,437,092
726 4,437,093
825.44 4,437,095
825.5 4,437,094
825.96 4,437,096
852 4,437,097
870.02 4,437,098

CLASS 343

756 4,437,099

CLASS 346

1.1 4,437,100
75 4,437,101
76 PH 4,437,102
140 R 4,437,103
4,437,104
4,437,105
160 4,437,106

CLASS 350

1.6 4,436,363
6.6 4,436,364
96.16 4,436,365
96.20 4,436,366
4,436,367
96.33 4,436,368
130 4,436,369
162.12 4,436,370
281 4,436,371
293 4,436,372
296 4,436,373
302 4,436,374
319 4,436,375
332 4,436,376
345 4,436,377
4,436,378
347 E 4,436,379
357 4,436,380
432 4,436,381
458 4,436,382
469 4,436,383
515 4,436,384
529 4,436,385
550 4,436,386
556 4,436,387

CLASS 351

206 4,436,388
208 4,436,389
234 4,436,390

CLASS 353

26 R 4,436,391
38 4,436,392
4,436,393

CLASS 354

1 4,436,394
159 4,436,399
296 4,436,400
312 4,436,401
406 4,436,395
416 4,436,396
465 4,436,397
476 4,436,398

CLASS 355

3 R 4,436,402
3 SH 4,436,403
4,436,404
4,436,406
3 TR 4,436,405
11 4,436,407
14 D 4,436,411
14 E 4,436,410
14 R 4,436,408
4,436,409
15 4,436,412
4,436,413
4,436,414
55 4,436,415
57 4,436,416

CLASS 356

1 4,436,418
4.5 4,436,417
35.5 4,436,419
128 4,436,420
153 4,436,421
349 4,436,422
350 4,436,423
356 4,436,424
361 4,436,425
369 4,436,426
385 4,436,427
432 4,436,428

CLASS 357

38 4,437,107
59 4,437,108
68 4,437,109

CLASS 358

41 4,437,110
44 4,437,111
4,437,112
93 4,437,113
101 4,437,114
106 4,437,115
4,437,116
111 4,437,117
113 4,437,118
136 4,437,119
139 4,437,120
160 4,437,121
166 4,437,122
4,437,123
4,437,124
167 4,437,125
224 4,437,126
296 4,437,127
335 4,437,128

CLASS 360

85 4,437,129
94 4,437,130
96.6 4,437,131
105 4,437,132

CLASS 361

33 4,437,133
56 4,437,134
91 4,437,135
146 4,437,136
172 4,437,137
283 4,437,138
313 4,437,139
402 4,437,140
403 4,437,141

CLASS 362

226 4,437,142
272 4,437,143
275 4,437,144
306 4,437,145

CLASS 363

21 4,437,146
61 4,437,147
89 4,437,148

CLASS 364

138 4,437,152
140 4,437,153
187 4,437,154
200 4,437,149
4,437,155
4,437,156
4,437,157
4,437,158
400 4,437,159
414 4,437,160
4,437,161
442 4,437,162
474 4,437,150
508 4,437,163
571 4,437,151
4,437,164
749 4,437,165
900 4,437,166
4,437,167
4,437,168
4,437,169
4,437,170

CLASS 365

177 4,437,171
182 4,437,172
193 4,437,173
218 4,437,174

CLASS 366

2 4,436,429
13 4,436,430
17 4,436,431
95 4,436,432
152 4,436,433

CLASS 367

24 4,437,175
38 4,437,176

CLASS 368

65 4,436,434
71 4,436,435
204 4,436,436

CLASS 369

45 4,437,177
75.1 4,437,178
172 4,437,179
217 4,437,180
244 4,437,181

CLASS 370

110.1 4,437,182
4,437,183

CLASS 371

19 4,437,184
39 4,437,185

CLASS 373

9 4,437,186
73 4,437,187

CLASS 374

32 4,436,437
165 4,436,438

CLASS 376

137 4,436,691
204 4,436,692
272 4,436,693
310 4,436,694
317 4,436,695

CLASS 378

205 4,437,188

CLASS 381

91 4,437,189

CLASS 400

126 4,436,439
144.2 4,436,440
304 4,436,441

CLASS 402

73 4,436,442

CLASS 403

14 4,436,443
24 4,436,444
189 4,436,445
384 4,436,446

CLASS 405

76 4,436,447
143 4,436,448
170 4,436,449
171 4,436,450
195 4,436,451
204 4,436,454
232 4,436,452
263 4,436,453
303 4,436,455

CLASS 406

19 4,436,456
116 4,436,457
135 4,436,458
181 4,436,459

CLASS 408

14 4,436,460

CLASS 409

132 4,436,461
218 4,436,462
232 4,436,463
233 4,436,464
243 4,436,465

CLASS 410

118 4,436,466

CLASS 411

34 4,436,467
248 4,436,468

CLASS 412

16 4,436,469

CLASS 414

36 4,436,470
4,436,471
50 4,436,472
310 4,436,473
417 4,436,474
569 4,436,475
690 4,436,476
723 4,436,477
752 4,436,478
757 4,436,479

CLASS 415

2 R 4,436,480
119 4,436,481

CLASS 416

1 4,436,482
143 4,436,483
178 4,436,484
241 R 4,436,485

CLASS 417

45 4,436,486
46 4,436,487
53 4,436,488
218 4,436,489
372 4,436,490
385 4,436,491
386 4,436,492
393 4,436,493
403 4,436,494

CLASS 418

55 4,436,495

CLASS 419

57 4,436,696

CLASS 420

440 4,436,697

CLASS 422

62 4,436,698
68 4,436,699
102 4,436,700
173 4,436,701
195 4,436,702
225 4,436,703

CLASS 423

11 4,436,704
54 4,436,705
65 4,436,706
226 4,436,707
329 4,436,708
437 4,436,709
552 4,436,710
573 G 4,436,711
4,436,712
4,436,713
4,436,714
574 R 4,436,716
579 4,436,715

CLASS 424

1.1 4,436,717
4,436,718
18.0 4,436,731
37 4,436,719
44 4,436,720
52 4,436,721
70 4,436,722
95 4,436,723
101 4,436,724
116 4,436,725
177 4,436,726
4,436,727
4,436,728
180 4,436,729
4,436,730
4,436,732
4,436,733
181 4,436,734
182 4,436,735
211 4,436,736
225 4,436,737
238 4,436,738
246 4,436,739
263 4,436,740
267 4,436,741
269 4,436,742
4,436,743
272 4,436,744
273 R 4,436,745
4,436,746
274 4,436,747
275 4,436,748
278 4,436,749
279 4,436,750
283 4,436,751
317 4,436,752
331 4,436,753
333 4,436,754

CLASS 425

28 R 4,436,497
73 4,436,498
195 4,436,499
290 4,436,500
308 4,436,501
331 4,436,502
384 4,436,503
543 4,436,496

CLASS 426

15 4,436,755
430 4,436,756
438 4,436,757
549 4,436,758
573 4,436,759
603 4,436,760

CLASS 427

38 4,436,761
39 4,436,762
40 4,436,774
47 4,436,763
54.1 4,436,764
74 4,436,765
96 4,436,766
138 4,436,767
227 4,436,768
252 4,436,769
255.3 4,436,770
284 4,436,771
379 4,436,772
380 4,436,773
419.7 4,436,775

CLASS 428

14 4,436,776
36 4,436,777
4,436,778
169 4,436,779
198 4,436,780
365 4,436,781
402 4,436,782
411 4,436,783
423.1 4,436,784
427 4,436,785
447 4,436,786
4,436,787
483 4,436,788
537 4,436,789
595 4,436,518
675 4,436,790
682 4,436,791

CLASS 429

1 4,436,792
17 4,436,793
40 4,436,794
53 4,436,795
112 4,436,796

CLASS 430

5 4,436,797
17 4,436,798
4,436,799
59 4,436,800
73 4,436,801
100 4,436,802
122 4,436,803
157 4,436,804
248 4,436,805
311 4,436,806
331 4,436,807
381 4,436,808
501 4,436,809
551 4,436,810
564 4,436,811

CLASS 431

15 4,436,504
76 4,436,505
4,436,506
170 4,436,507

CLASS 432

214 4,436,508
253 4,436,509

CLASS 433

4 4,436,510
49 4,436,511
82 Re.31,537
129 4,436,512

CLASS 434

60 4,436,513

CLASS 435

14 4,436,812
109 4,436,813
162 4,436,814
172 4,436,815
240 4,436,816
313 4,436,817
316 4,436,818

CLASS 436

1 4,436,819
10 4,436,821
67 4,436,820
164 4,436,822
169 4,436,823
514 4,436,824
520 4,436,825
525 4,436,826
534 4,436,827
545 4,436,828

CLASS 440

89 4,436,514

CLASS 455

600 4,437,190

CLASS 464

114 4,436,515
128 4,436,516

CLASS 493

45 4,436,517

CLASS 501

22 4,436,829
96 4,436,830
119 4,436,831

CLASS 502

84 4,436,832
176 4,436,833
201 4,436,834
208 4,436,835
317 4,436,836

CLASS 518

700 4,436,837
4,436,838

CLASS 521

58 4,436,840
64 4,436,839
106 4,436,841
115 4,436,842
167 4,436,843

CLASS 523

144 4,436,844
172 4,436,845
175 4,436,846
203 4,436,847
426 4,436,848
501 4,436,849

CLASS 524

8 4,436,850
43 4,436,851
88 4,436,852
91 4,436,853
139 4,436,854
145 4,436,855
211 4,436,856
260 4,436,857
296 4,436,858
297 4,436,859
394 4,436,860
425 4,436,861
445 4,436,862
451 4,436,863
458 4,436,864
503 4,436,867
504 4,436,865
510 4,436,866
783 4,436,868

CLASS 525

51 4,436,869
53 4,436,870
64 4,436,871
179 4,436,872
314 4,436,873
327.1 4,436,874
385 4,436,875
394 4,436,876
437 4,436,877
438 4,436,878
439 4,436,879
504 4,436,880
4,436,881

CLASS 526

106 4,436,882
4,436,883
111 4,436,884
214 4,436,885
257 4,436,886
263 4,436,887
348.1 4,436,888

CLASS 528

93 4,436,890
111 4,436,891
117 4,436,892
173 4,436,893
176 4,436,894
288 4,436,895
323 4,436,897
336 4,436,898
395 4,436,899
490 4,436,900
498 4,436,901
501 4,436,902

CLASS 544

27 4,436,904
016 4,436,903
182 4,436,905
187 4,436,906
238 4,436,921
335 4,436,907

CLASS 546

206 4,436,908
245 4,436,910
248 4,436,909
291 4,436,911

CLASS 548

233 4,436,912
316 4,436,913
348 4,436,914
432 4,436,915
508 4,436,916
4,436,917
546 4,436,918

CLASS 549

4 4,436,919
227 4,436,920
251 4,436,922
352 4,436,923

CLASS 556

416 4,436,924

CLASS 560

19 4,436,925
246 4,436,926
4,436,927
4,436,928
4,436,929
4,436,930
4,436,931
4,436,932

CLASS 562

470 4,436,933
502 4,436,934
519 4,436,889

CLASS 564

49 4,436,935
409 4,436,936
4,436,937
474 4,436,938

CLASS 568

813 4,436,939
857 4,436,940

CLASS 570

144 4,436,941
145 4,436,942

CLASS 585

357 4,436,943
408 4,436,944
488 4,436,945
510 4,436,946
525 4,436,947
532 4,436,948
664 4,436,949

CLASS 604

175 4,436,519
385 4,436,520

CLASSIFICATION OF DESIGNS

D2—	44	272,959
	231	272,960
	278	272,961
		272,962
	310	272,963
		272,964
D3—	33	272,965
	76	272,966
D6—	56	272,967
	61	272,968
	86	272,969
	96	272,970
D7—	16	272,971
	47	272,972
		272,973
	309	272,975
	311	272,976
	350	272,977
	357	272,978
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